THE IRON TRADE REVIEW

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MORE INTEREST

IS SHOWN IN PRICES OF SOME FOREIGN PRODUCTS

Since Passage of Tariff Bill—Heavy Inquiry for Steel Making Irons in the Pittsburg District—New Plan for Buying Scrap.

The condition of the iron trade continues highly satisfactory. The first week under the new tariff gives little evidence of that measure affecting the trade in iron and steel products to any important extent this year, although there is much more inquiry for prices on foreign material on which duties have been reduced, and English iron has advanced. There is some confusion in alloys, and zinc has advanced in price. Scarcity of labor, especially in machine shops and in mining operations, is becoming a factor of increasing importance. The Steel Corporation will make new records in ore shipments and pig iron production this month.

Iron Ore Activity

Surprising activity continues in Lake Superior iron ore, and it is probable that August will make a new record for shipments. Sales have been so heavy that, figuring on a total movement of 38,000,000 tons, it is now evident that there will be no more than consumers require—in fact, buyers discover already a scarcity of choice Bessemer grades. Mining companies are finding it very difficult to increase their output. Announcements of new construction include two new blast furnaces, 10 open-hearth furnaces and a new structural mill by the Bethlehem Steel Co., and a blast furnace by the Youngstown Sheet & Tube Co. to take the place of the smaller stack sold to a Sharpsville, Pa., foundry.

Pig Iron Conditions

A very decided increase of interest in steel making irons has been a feature of the pig iron market in the central west. Some exaggerated reports, which are greatly deplored in the trade, have been current, but actual sales in the Pittsburg district have amounted to 25,000 tons, while inquiries foot up about 150,000 tons. The Republic Iron & Steel Co. bought 15,000 tons of Bessemer for prompt shipment at $16, and a Youngstown company which was in the market for 25,000 tons, succeeded in getting only 15,000 tons of Bessemer for last half delivery at $16, valley. Another Pittsburg steel company is in the market for 25,000 tons of steel making iron for forward delivery. The Standard Steel Car Co. is inquiring for 100,000 tons of basic iron for delivery throughout the year 1910. Furnaces are, however, very cautious about making a quotation for delivery so far in advance. In the eastern territory, sales of basic have been made at higher quotations. Foundry irons are for the most part strong, with $13, Birmingham, as the minimum price for No. 2, for the remainder of this quarter and $13.50 for fourth quarter. In the Chicago district, prices are firm and one sale was made at $17.65, delivered in Milwaukee.

Buying Scrap Steel

An interesting development in the Philadelphia district is the uniting of the leading users of heavy melting steel scrap for the purpose of making their purchases through one agency. The effect of this departure is somewhat problematical. It has the co-operation of several of the scrap interests, but is also being vigorously opposed by equally important concerns in the trade, one of which has sent dealers and brokers a circular urging them to hold their scrap for higher prices. Considerable tonnage has been picked up at about $17 delivered, which is probably the prevailing figure in the Philadelphia district.

Structural Material

The demand for structural material shows some decrease, which is natural for the reason that, as many mills are two months behind in deliveries, it would be difficult to fill many orders before cold weather sets in. Prices of fabricators are advancing.

Railroad Buying

The Baltimore & Ohio railroad has purchased 20,000 tons of rails from the Steel Corporation. The Gould lines have ordered 20,000 tons and the Chicago Great Western 10,000. The Lackawanna Steel Co. has sold 5,000 tons of rails to the Manila railroad, and 1,000 tons to the Alton, and scattering sales by the Carnegie Steel Co. amount to about 4,000 tons. The Baldwin Locomotive Works has taken orders for 50 locomotives from Hill railroads, and expects soon to be working night and day, employing about 20,000 men. Recent car orders amount to fully 25,000. The Pennsylvania has divided an order for 3,155 freight cars between the Standard Steel Car Co. and the Cambria Steel Co. It is reported that the Chicago & Great Western has bought 1,500 cars from the American Car & Foundry Co. The 3,000 box cars. reported last week as ordered by the Chicago, Burlington & Quincy from the American Car & Foundry Co., will be built at Madison, Ill. The same railroad has ordered 500 refrigerator cars from the American Car & Foundry Co. and 500 steel gondolas from the Pressed Steel Car Co. Its orders for 500 flat cars and 1,000 stock cars have not been placed, but specifications are in the hands of the car builders. The Chicago, Rock Island & Pacific is asking figures on 1,000 steel underframe 40-foot box cars, and 1,000 standard 40-foot furniture cars.

THE WEEK IN IRON CENTERS

PITTSBURG.

Heavy Inquiry for Steel Making Iron and Some Sales—Effect of Tariff.

Office of THE IRON TRADE REVIEW,
510 Park Building, Aug. 10.

In all respects the iron and steel industry appears to be making consistent progress. New business at present is not so heavy as it was because the needs of the large consuming interests have been well covered, but where the mills show any disposition to let down the bars on extended deliveries, which is exceptional, buyers are quick to take advantage of their opportunity. Many of the mills have pursued a conservative policy as to booking forward contracts and it is evident that there is still considerable tonnage to be taken, especially in the fourth quarter.

Specifications are very heavy in most lines of finished and semi-finished material with the result that deliveries are becoming more delayed, ranging from five to six weeks in some grades of sheets, plates and shapes with the large makers. Steel bar shipments are also showing the effect of the heavy orders being regularly entered on mill books. Raw steel continues much in demand with the mills conserving any surplus supply and asking higher prices when disposed to sell. Sheet bars are difficult to obtain and there have been instances of forced buying by some makers from other mills, of plain sheets for the highly-finished products. Rail conditions are gradually improving and the present interest of the railroads in the general market may be stated as one of moderate but steady buying. Labor troubles are less disturbing. The Pittsburg market shows much interest in steel-making pig iron as sales of 25,000 tons have been made and 150,000 tons are pending.

The enactment of the tariff bill has been viewed with satisfaction by iron and steel makers as finally disposing of this rather disquieting factor, but the market has displayed no immediate effects of such action, since the provisions of the bill have been anticipated and practically discounted for some time. There has been, however, a renewed interest in foreign markets shown on the part of domestic buyers and representatives of European interests report a lively inquiry for prices on those materials on which a reduction of duties has been made by the revised tariff schedules. A development attributed to this influence has been the moderate strengthening of prices in Middlesboro, Eng., pig iron during the week.

Further additions are being made to active steel works capacities. The Carnegie Steel Co. this week fired the open-hearth furnaces of the North Sharon works at Sharon, Pa., and is making the first steel at this plant since October, 1907. The steel works and rolling mills are being started in full, leaving the company with one idle plant, Columbus, which will resume shortly. The new No. 6 Duquesne blast furnace of the Carnegie Steel Co. was blown in this week, but total active pig iron capacity, 51 out of 59 stacks, remains the same, as one of the Carrie furnaces has been put out for repairs.

Pig Iron.—Heavy inquiries for steel-making iron and some noteworthy buying by large steel interests have given the pig iron market the aspect of old-time vigor in the past week. As a consequence of the movement, some exaggerated reports of buying have been circulated, but the tonnage actually closed has been about 25,000, while pending inquiries total about 150,000 tons.

The Republic Iron & Steel Co. bought 15,000 tons of Bessemer iron for prompt shipment at $16 furnace from a valley maker. This iron will go to repay a tonnage borrowed by the company several weeks ago from a Mahoning valley interest. The Youngstown Sheet & Tube Co. has closed for 7,500 tons of Bessemer for last half delivery at $16 valley furnace, the metal to be furnished by the Bessemer Pig Iron Association. This company has had out a large inquiry and will likely make additional purchases soon, but the available Bessemer tonnage in the Mahoning and Shenango valley district appears to be limited at present. Another Pittsburg steel company is out for 25,000 tons of steel-making iron for forward delivery.

The largest single development to attract interest is the action of the Standard Steel Car Co. in entering the market with an inquiry for 100,000 tons of basic iron for delivery over the entire year 1910. This iron is intended for the new open-hearth steel works to be erected at Butler, Pa., the announcement of which has just been made. This business is still pending, as the furnaces are not desirous of making quotations on such extended shipment. Work on the new steel plant has just been inaugurated and it is not likely that any steel will be made there until well into next year. Several smaller inquiries for Bessemer and basic for this year's delivery are also pending and there has been some additional selling of these grades. Light tonnages of Bessemer have been closed at $16.25 valley. In basic, sales have been made at $15.25 valley.

It is stated in well informed circles that the United States Steel Corporation will not be a buyer of either Bessemer or basic iron at the present time.

While the foundry iron market has seemed quite firm at $15.50 valley for prompt or future delivery, it is evident that some iron is still procurable at lower figures. A sanitary manufacturing interest in the past week bought about 4,000 tons of foundry and forge for last quarter and a part of the No. 2 grade is reported to have been secured at a price equivalent to about $15.25 valley. Some selling for next year has also been done only slightly in advance of the current quotations, but the market for such shipment is still indefinite, as furnaces are not anxious to commit themselves and transactions have shown a wide range of prices.

On prompt and third quarter shipment on northern iron we quote as follows:

Bessemer, valley	$16.00
Bessemer, Pittsburg	16.90
No. 2 foundry, Pittsburg	16.15 to 16.40
Gray forge, Pittsburg	15.00 to 15.15
Basic, valley	15.25 to 15.50
Basic, Pittsburg	16.15 to 16.40

Ferro-Alloys.—The ferro-alloy market is still in a rather unsettled state by reason of the revision of the duties on foreign material which have gone into effect through the enactment of the new tariff law. In ferro-manganese on which the duty has been reduced from $4 to $2.50 a ton, sales of prompt material have been made at about $41 Baltimore at the new duty, which is equivalent to a slight advance over the former market. On forward shipment, the situation also is stronger. Heavy buying of ferro-manganese for delivery up to July 1, 1910, has been done during the past several months and it is estimated that upwards of 30,000 tons have been sold with change of duty to account of buyer. The market has advanced very little under this heavy movement which is attributed to the dull conditions of trade in foreign countries especially in England. In 50 per cent ferro-silicon, sellers give their ideas of prices at from $65 to $66 Pittsburg

at the new duty, which represents an increase of from $4 a ton to 20 per cent ad valorem. Before the duty was effective last week, a local steel company closed for 300 tons for last half at about $62.50 Pittsburg, but on such sales changes of duty have been made at the risk of buyer. The increased duty on the lower grades of ferro-silicon from $4 to $5 a ton has resulted in an advance of about $1 in which most of the domestic makers have shared, although some of them have been aggressive in the past in making low quotations.

We quote ferro-manganese at from $41, to $41.50, Baltimore, prompt shipment, or for delivery this year and the first half of 1910, $42.50 to $43.50, Baltimore. The freight from Baltimore to Pittsburg is $1.95.

Fifty per cent ferro-silicon is quoted at $65 to $66, Pittsburg; domestic, 12 per cent, $26; 11 per cent, $25; 10 per cent, $24, Pittsburg.

Plates.—The Pennsylvania lines west have made awards of the 3,155 freight cars which were included in the recent announcement of their contemplated purchase or building of 8,000 cars and the bulk of this contract has been divided between the Standard Steel Car Co. and the Cambria Steel Co. The plate tonnage being entered upon mill books is holding in a steady volume and numerous miscellaneous projects are contributing to the market's strength. Deliveries on plates and shapes are gradually becoming more delayed and with some of the principal producers are now being made in from five to six weeks. The minimum quotation on plates is 1.40c, Pittsburg, but some business is being closed at 1.45c, at which level the large independents are holding. We quote the plate market as present as follows:

Tank plates, ¼-inch thick, 6¼ to 100 inches, 1.40c to 1.45c, mill. Extras are as follows per 100 pounds: Boiler and flange steel plate, 0.10c; A. B. M. A. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches, excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end not being less than 30 inches, 0.10c; circles, 0.20c. Plates in widths over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ½-inch to and including 3/16-inch plate on thin edges, 0.10c; under 3/16 to and including No. 9, 0.25c. Five cents extra for less than carloads. Terms, net cash in 30 days.

Sheets.—Heavy specifications are being entered by the mills for sheets and there is a very fair new buying activity for this season of the year. Deliveries are averaging around four weeks but in blue annealed range from five to six weeks. Prompt shipments are being obtained in galvanized. The price situation continues to strengthen and two middle western independent interests during the past week notified its trade that all their quotations had been withdrawn. Price irregularity in the market recently has been confined to some of the western independents due in part to different basing standards followed. The scarcity of sheet bars has been reflected by the action of some makers of highly finished products in buying plain sheets from other mills instead of rolling down semi-finished steel. The leading interest this week put on several additional mills at its Muncie plant and is now operating 139 mills or 78 per cent of serviceable capacity. The independents are running at 88 per cent of capacity. We quote present sheet prices as follows:

Blue annealed sheets, Nos. 10 and heavier, 1.60c; Nos. 11 and 12, 1.65c; Nos. 13 and 14, 1.70c; Nos. 15 and 16, 1.80c; box annealed sheets, Nos. 10 to 12, 1.85c; Nos. 13 and 14, 1.90c; Nos. 15 and 16, 1.95c; Nos. 17 to 21, 2c; Nos. 22 to 24, 2.05c; Nos. 25 and 26, 2.10c; No. 27, 2.15c; No. 28, 2.20c; No. 29, 2.25c; No. 30, 2.35c; galvanized sheets, Nos. 13 and 14, 2.25c; Nos. 15 and 16, 2.40c; Nos. 17 to 21, 2.50c; Nos. 22 to 24, 2.65c; Nos. 25 and 26, 2.85c; No. 27, 3.05c; No. 28, 3.25c; No. 29, 3.40c; No. 30, 3.65c; painted roofing sheets, $1.55 per square for No. 28 gage, 2½-inch corrugation, and galvanized roofing sheets, $2.80 per square for No. 28 gage, 2½-inch corrugation.

Tin Plate.—New contracting in tin plate is especially good at the present time and is beyond the expectations of makers, as usually mid-summer buying is of very modest proportions. The indications, however, are pointing to larger fruit and vegetable crops than had been anticipated and canning interests are increasing their orders for early shipment. The American Sheet & Tin Plate Co. continues to increase its operations, although the Amalgamated association is holding firm in its fight against the open shop policy. The company this week is running 134 mills or 60 per cent of serviceable capacity compared with 118 mills last week. Out of the 50 mills at the New Castle and Shenango plants at New Castle, Pa., 19 are operating. At Sharon 10 mills out of 20 are running. The independent tin plate mills are generally booked to full capacity, but a temporary shut-down of some plants the past week reduced their activities to about 75 per cent of total equipment. Tin plate prices are firm and we quote as follows:

Coke tin plate, 100-pound basis, 14 x 20, 3.45 f. o. b. mill, Pittsburg district, and $3.40 in large lots. Terms 30 days, less 2 per cent for cash in 10 days.

Rails and Track Material.—A freer buying movement of rails is in evidence, although no especially large tonnages are being closed. The local maker is getting an increasing number of contracts of 1,000 tons and larger, having taken several of this class during the past week. It is also getting better specifications and the Edgar Thomson mills are working at a better percentage of capacity than for months. Prospects in the standard rail market are considerably better. In light rails the Carnegie Steel Co. entered about 2,000 tons domestic and 5,000 tons for export in the week. The market is firm at advanced prices. The demand for track fastenings remains very heavy, especially in splice bars. There is a good call for spikes principally in small quantities and prices are more consistent. The spike plants of a number of companies are running full. We quote the market on Bessemer rails as follows, the base price on open-hearth rails being $30 mill:

Fifty-pound and heavier, 500-ton and over, $28; carloads and less than 500 tons, $30; less than carload lots, $32; light rails, 8-pound, $31; 12-pound, $30; 16 to 25-pound, $29; 30 to 35-pound, $28.75; 40 to 45-pound, $28; angle splice bars for standard sections, 1.50c, Pittsburg; standard spikes, 1.65c to 1.70c, Pittsburg; hand spikes, 1.65c to 1.75c Pittsburg.

Steel—Consumers of semi-finished steel continue to close on all tonnages which the mills are seeing fit to offer and generally are paying advanced prices. Material of all grades, especially open-hearth billets, continues scarce, as the finishing mill needs of the different makers are forcing them to adopt conservative policies of selling raw steel. Consumers are drawing heavily against their regular contracts with certain mills. Sales of forging billets are reported this week at $29, Pittsburg. Sheet bar users are having difficulty in covering any excess requirements and the market generally is regarded at $26, mill.

Bessemer 4 x 4 billets with 0.25 carbon and less are regularly quoted at $24.50 to $25.50, Pittsburg, with the usual extras for size and analysis, and open-hearth rolling billets from $25.50 to $26.50, Pittsburg. Forging billets are held at $28 to $29, Pittsburg. Sheet and tin bars are quoted at $26, Pittsburg.

Hoops and Bands.—Conditions in hoops are showing improvement, as the large users are sounding the market preparatory to fall contracting. The miscellaneous trade is doing very well in an ordering way and specifications to the mills are favorable. Contract prices are firm, but there is some unsteadiness where specifications are desirable. Bands are now quoted at a minimum of 1.30c, Pittsburg. We quote the market as follows:

Hoops in carload lots, 1.40c to 1.50c; in less than carload lots, 1.60c; bands, 1.30c, base half extras as per standard steel.

Merchant Bars.—While the minimum price on steel bars remains 1.30c, Pittsburg, which applies largely to very attractive orders, makers state they are having little difficulty in booking business at 1.35c, Pittsburg. Independent companies generally are quoting 1.35c, but some of them are entirely out of the market. A number of new contracts are being taken for delivery up to Nov. 1 and the inquiry is good. Specifications against contracts are very heavy and deliveries are getting less prompt. Some companies report an increased tonnage in orders for rolling on their books compared with the same date in July, which showed the largest total since the active months of 1907. Many small orders in bar iron, which aggregate a very favorable tonnage, are being entered. The railroads are buying moderately but consistently. Some of the western mills of the Republic Iron & Steel Co. are now running double turn and measures have been taken to relieve them of some of their tonnage. Prices are firm at from 1.45c to 1.50c, this district, but in the west are lower and range from 1.35c to 1.40c, Chicago. The active demand for shafting continues with a consequent regularity in quoted discounts. We quote the present market as follows:

Common iron bars, 1.45c to 1.50c, Pittsburg; Bessemer and open-hearth steel bars, 1.30c to 1.35c; plow and cultivator, 1.30c to 1.35c; channels, angles, zees, tees, under 3-inch, 1.40c, all f. o. b. mill. The following differentials are maintained on steel: Less than 2,000 pounds, 0.10c advance; less than 1,000 pounds of a size, 0.30c advance. Cold rolled and ground shafting, 60 per cent in carloads and 55 per cent in less than carloads, delivered in base territory. Planished and machine straightened tire is 1.50c base; iron finished tire under 1½ by 1½ inches, 1.45c, both plus ½ extra on tire card; iron finished tire, 1½ x ½ and over, 1.30c, plus ½ extra on the steel bar card.

On cold rolled strip steel, width 1½ inches and wider, and 0.100 inch and thicker, we quote base prices for 100 pounds, $3.05 on hard, and $3.30 on soft.

Structural Material.—An improvement in fabricating prices appears the most noteworthy development of the structural situation and haste is being made by builders to place pending jobs under contract. Quite a fair inquiry is current and is very well distributed. Minimum prices of shapes remain at 1.40c, Pittsburg, while some companies are holding at 1.45c. Deliveries of material are gradually falling behind and with some large makers now run from five to six weeks. Heyl & Patterson, Pittsburg, have been awarded the contract for building a large handling and storage coal dock at Superior, Wis., for the Philadelphia & Reading Coal Co., which will require about 3,300 tons of steel. This will be furnished by the Carnegie Steel Co., as well as the 13,500 tons of material required for the Kansas City terminal railway bridge, the award of which to the McClintic-Marshall Construction Co. was announced last week. The Standard Oil Co. has let the contract to the Thompson-Starrett Co. for an office building in this city, and the 800 tons of steel will likely go to the American Bridge Co. The Jones & Laughlin Steel Co. has taken the contract to furnish about 500 tons of sheet steel piling for the coffer dam for the foundations of the new Scherzer lift bridge to be erected over the Cuyahoga river at Cleveland by the B. & O. railroad. We quote the market on structural shapes as follows:

Beams and channels, 15-inch and under, 1.40c to 1.45c; over 15 inches, 1.50c to 1.55c; zees, 1.40c to 1.45c; tees, 1.40c to 1.45c; angles, from 3 to 6 inches, 1.40c to 1.45c; over 6 inches, 1.50c to 1.55c; universal and sheared plates, 6¼ inches wide and wider, 1.40c to 1.45c.

Merchant Pipe.—The pipe market is in a very strong position, but, despite persistent rumors, no official advance of merchant goods has been made. Jobbers are ordering in steady volume and as a rule are not accumulating large stocks as consuming demands upon them are heavy. Deliveries are still fairly easy with some companies, although it is stated that most of the independents are well filled with tonnage. No important line orders are pending and it is not likely that much additional business of this class will be placed owing to the lateness of the season in most fields and to delayed deliveries. We quote the following official discounts on merchant pipe subject to an additional one point and five off to jobbers:

	—Steel—		—Iron—	
	Black.	Galv.	Black.	Galv.
⅛ and ¼ inch.....	72	56	67	..
⅜ inch	73	59	68	54
½ inch	76	64	71	59
¾ to 6 inch	80	70	75	65
7 to 12 inch	75	60	70	53
PLUGGED AND REAMED.				
1 to 4 inch	78	68	73	63
EXTRA STRONG PLAIN ENDS.				
⅛ to ⅜ inch.....	65	53	60	48
½ to 4 inch.....	72	60	57	55
4½ to 8 inch.....	68	56	63	51
DOUBLE EXTRA STRONG PLAIN ENDS.				
½ to 8 inch.....	61	50	56	45

Boiler Tubes.—Activity in the boiler tube market is still lagging although some makers are fairly well booked as to orders for nearby delivery. Prices are not firm in some quarters. We quote the following official discounts on lap-welded steel boiler tubes to jobbers in carloads:

1 to 1½ inch	50
1¾ to 2¼ inch	62
2½ inch	64
2¾ to 5 inch	70
6 to 13 inch	62

2½ inch and smaller, over 18 feet, 10 per cent net extra.
2¾ inch and larger, over 22 feet, 10 per cent net extra.
To destinations east of the Mississippi river will be sold at delivered discount for carloads lowered by two points, for lengths 22 feet and under; longer lengths, f. o. b. Pittsburg.

We quote the following official discounts on charcoal iron tubes to jobbers:

1 to 1½ inch	45
1¾ to 2¼ inch	45
2½ inch	50
2¾ to 5 inch	57
6 to 13 inch	45

Wire Products.—A very fair amount of new tonnage in wire products is coming out at the advanced prices although the jobbing trade has well covered for its requirements up to about Oct. 1. Contracts from the manufacturing trade are being taken to the end of the year, but deliveries to jobbers at present prices are limited to 60 days. Specifications are coming in freely as the jobbers are preparing for the fall movement to the farming communities. In some cases the mills are alloting their output to different buyers according to the regular requirements of the latter. We quote present prices as follows:

Wire nails, jobbers' carload lots, $1.80; retailers' carload lots, $1.85; painted barb wire, jobbers' carload

lots, $1.80; retailers' carload lots, $1.85, with 30c for galvanizing; plain wire to jobbers in carloads, $1.60, and to retailers in carloads, $1.65; polished staples, $1.80; galvanized staples, $2.10.

Wire Rods.—While there is very little uncovered rod business in this territory, makers are firm in their ideas of prices and would ask advances. We quote nominally $31 Pittsburg on Bessemer and $32 Pittsburg on open hearth rods.

Coke.—Spot furnace coke prices have materially stiffened during the past few days and a minimum of $1.65 ovens is now being quoted as against $1.50 ovens a week ago. The contract market is also higher. The upturn in coke is due in part to the absorption of much of the spot offerings which have been a great element of weakness, by several selling interests which are covering requirements brought about by the contemplated resumption of several furnaces. Production in the Connellsville regions is also being held back somewhat by the prevailing scarcity of labor and the effect of the hot weather conditions upon the workmen. Foundry coke has not changed, although specifications are quite free and some companies have made nominal advances. We quote spot furnace coke at from $1.65 to $1.75 ovens and on contract from $1.75 to $1.85 ovens according to grade. On first class Connellsville foundry coke the range is from $1.90 to $2 ovens for prompt shipment and on contract from $2 to $2.35 ovens. The *Courier's* figures for the week ending July 31 show 30,372 ovens active with an output of 385,817 tons compared with 30,274 active ovens and a production of 385,452 tons the preceding week.

Old Material.—A state of very moderate purchasing but of a strong level of prices prevails in old material. Consumers are showing some evidence of pressing needs and are entering the market a little more freely, but they are reluctant to pay dealers' prices. Some of the mills are active in bidding direct for tonnage. The dealers continue strong in their views of the future and predictions of $17 steel soon are being made. Both wrought and cast scrap is moving better and slight advances have been recorded. The Pennsylvania Railroad took bids Aug. 10 on its monthly list of 15,000 to 20,000 tons and will announce awards on the 13th. We quote gross tons delivered in the Pittsburg district as follows:

Heavy melting scrap, $15.75 to $16.25; rerolling rails, $16.50 to $17; bundled sheet scrap, $14.50 to $15.00; iron axles, $24 to $24.50; old iron rails, $18.50 to $19; No. 1 wrought scrap, $16.50 to $17.00; old car wheels, $16 to $16.50; low phosphorus, $19 to $20; machine shop turnings, $11.25 to $11.75; cast borings, $9.25 to $9.75; No. 1 cast scrap, $15.25 to $15.75; malleable, $15 to $15.50; stove plate, $12 to $12.50.

CHICAGO.

Pig Iron Stronger and Higher Prices Expected—A Sold-Up Market.

Office of THE IRON TRADE REVIEW,
1328 Monadnock Block, Aug. 10.

The two words which describe the condition of the iron and steel market in Chicago, in the past week, are, "Routine," and "Strength." The first applies to the character of the transactions which have taken place, and the second is becoming more and more apparent, as the dominant feature in the market, with the passing of each week. It might be called a sold-up market, and that term would not be far amiss. The buyer who is playing a waiting game, in the hope of seeing lower prices, would seem to be playing to lose, as all prophecies, from that of the president of the Steel Corporation, to that of the minor prophets, indicate only one thing—an era of unprecedented prosperity. Tremendous crops have to be moved, and the railroads already have made strenuous efforts to get their equipment up to a mark approximating the adequacy which the conditions will demand. These efforts were inaugurated a little tardily, and the railroads have suffered from the consequences of their delay. In the pig iron market, there is a steady accumulation of strength, which, in all probability, will be reflected in an advance in prices by another week. Billets are sold up, and prices, when mentioned, have attached to them the qualification, "if we had any to sell." Trade in merchant bars, sheets and plates, is active in a small-lot way, and prices are maintained. Structural material continues to be the line in which the worst congestion is felt, and the situation does not improve. Orders for cars continue heavy. One of the more recent reports is of 1,500 cars for the Chicago Great Western, taken by the American Car & Foundry Co., but this cannot be confirmed at this writing. Rumors of an anticipated raising of prices on wrought iron pipe again have appeared, but cannot be traced to any definite source.

The market is in much the same condition as was reported last week; the tone is fully as strong as at that time, and there is no disposition on the part of makers to press their customers in order to make sales. The buying interests do not seem to have realized, as yet, that the upward movement in prices has begun, and that, in all probability, there will be no recession to amount to anything, until prices on a considerably higher level have been reached. The business done during the past week has been continued with the exception of two sales of small lots, which, in the aggregate have amounted to a very fair tonnage. Dealers are satisfied to wait until their customers make known their wants, a condition which is in sharp contrast with that existing not many weeks ago, when producers and brokers were doing their best to make sales. Prices can not be said to have advanced, but they are held more and more firmly, and it is the confident expectation of many that by another week there will be an advance in iron, both north and south. In some cases slight advances are already recorded; for example, a sale of 10,000 tons to a machinery interest at $17.50, Milwaukee, was followed a few days later by the sale of a smaller tonnage to the same concern at $17.65.

We quote for Chicago delivery as follows:

Lake Superior charcoal	$19.50 to 20.00
Northern foundry No. 1	17.50 to 18.00
Northern foundry No. 2	17.00 to 17.50
Northern foundry No. 3	16.50 to 17.00
Southern foundry No. 1	17.85
Southern foundry No. 2	17.35
Southern foundry No. 3	16.60
Southern foundry No. 4	16.10
Southern No. 1 soft	17.85
Southern No. 2 soft	17.35
Southern gray forge	15.85
Southern mottled	15.60
Southern silveries, 4 per cent silicon	17.35 to 17.85
Southern silveries, 5 per cent silicon	17.85 to 18.35
Southern silveries, 6 per cent silicon	18.85 to 19.85
Jackson Co. silveries, 6 per cent.	19.90
Jackson Co. silveries, 8 per cent.	20.90
Jackson Co. silveries, 10 per cent	21.90
Malleable Bessemer	17.00 to 17.50
Standard Bessemer	17.65 to 17.90
Alabama basic	16.85 to 17.35

Billets.—The situation in this market is one in which prices are merely nominal, for the reason that no billets are to be had, for near-by delivery. While $28.00 remains the nominal quotation, it is probable that, if anyone had billets to sell, he might get $30.00 for them, as well as the lower figure.

Merchant Bars.—There is considerable activity in this line, and some hardening in prices. The railroads put off for so long making known their requirements that they now find themselves confronted with a serious situation in the matter of securing such material as they stand badly in need of. Mills are running from eight to ten weeks behind their orders. We

quote, for Chicago delivery, as follows:

Bar iron, 1.37½c to 1.40c; hard steel bars, 1.35c to 1.40c; soft steel bars and bands, 1.48c to 1.53c, half extras; soft steel angles, less than 3 x 3, 1.58c, half extras; hoops, 1.63c to 1.68c base, full extras; planished or smooth finished tire steel, 1.63c to 1.68c; iron finish, up to 1½ x ½ inch, 1.63c base, tire card; iron finish, 1½ x ½-inch and larger, 1.43c to 1.48c base, steel card; channel for solid rubber tires, ¾ to 1 inch, 1.93c to 1.98c; and 1⅛ inch and larger, 1.83c to 1.88c; smooth finished machinery steel, 1.73c; flat sleigh shoe, 1.53c; toe calk steel, 2.03c; spring steel, 2.08c; crucible spring steel, 2.58c; tool steel, 7c to 9c, with higher prices for special grades. Quotations on shafting are 60 per cent off the list for carload lots, and 55 per cent off for less than carload lots, carload freight allowed to points in base territory. On iron and steel bars from local stocks, we quote as follows: Bar iron, 1.70c to 1.80c, base, full extras; soft steel bars, $1.65 per 100 pounds base, plus half extras; soft steel hoops, 2.20c, full extras.

Plates.—The same features may be said to characterize this line as were noted last week. There is a good, steady business, and prices are held firmly and somewhat higher. We quote for Chicago delivery, as follows:

Tank plates, ¼-inch thick, 6¼ to 100 inches, 1.58c. For extras see Pittsburg report. Store quotations are without change, as follows:

Tank steel, ¼-inch and heavier up to 72 inches wide, 1.75c; from 72 inches wide to 96 inches wide, 1.85c; 3-16-inch up to and including 60 inches wide, 1.85c to 1.90c; 72 inches 2.10c to 2.15c; No. 8 up to 60 inches wide, 1.85c to 1.90c. Flange and head quality, 25c extra.

Sheets.—The advance noted in these columns last week still holds, and the same general features are reported by manufacturers. The market is active, and that description covers the situation.

For mill prices, see Pittsburg report. Freight to Chicago, 18 cents. We quote store prices at Chicago as follows:

No. 10, 2c to 2.10c; No. 12, 2.05c to 2.15c; No. 14, 2.10c to 2.20c; No. 16, 2.20c to 2.30c; Nos. 18-20, 2.50c to 2.55c; Nos. 22-44, 2.55c to 2.60c; No. 26, 2.60c to 2.65c; No. 27, 2.65c to 2.70c; No. 28, 2.75c to 2.80c; No. 30, 3.05c; galvanized sheets, No. 10 to 16, 3c to 3.10c; Nos. 18 and 20. 3.05c to 3.15c; Nos. 22 to 24, 3.20c to 3.25c; No. 26, 3.40c to 3.45c; No. 27, 3.60c to 3.65c; No. 28, 3.80c to 3.90c; No. 30, 4.20c to 4.50c.

Structural Steel.—This line of steel products continues to be the firmest in the entire list. The situation as to deliveries is growing steadily worse. The volume of small inquiries is large, and specifications from railroads on bridge material are coming in at the rate of from 4,000 to 5,000 tons a week. If customers are willing to pay a premium for stock material, fabricators will promise delivery in four to six weeks, on small orders; otherwise, no promise earlier than December will be named. The Kesner building, mentioned some time ago, is to be a 21-story structure, and will require about 2,800 tons. It is now announced that the Harris Trust and Savings Bank will erect a 22-story building, which will require about 3,000 tons. The contract for the addition to the Congress Hotel, requiring about 100 tons, was secured by the Kenwood Bridge Co. The Alworth building, at Duluth, Minn., 1,000 tons, went to the McClintic-Marshall Construction Co. It is expected that the contract for the addition to the Pullman shops will be let this week. The original estimate was put at 7,000 tons, but is now given at 9,000 tons, and may reach 10,000 tons before the contract is concluded.

We quote mill prices for structural shapes, Chicago delivery, as follows:

Beams and channels, 15-inch and under, 1.58c. For extras, see Pittsburg report. Local store prices are as follows:

All angles, 3 inches and larger, including 6 inches, $1.75 per 100 pounds; angles over 6 inches, $1.85 per 100 pounds base; beams, 3 to 15 inches, inclusive, $1.75 per 100 pounds base; channels, 3 inches and larger, $1.75 per 100 pounds base.

Rails and Track Supplies.—Sales of heavy section rails, during the past week, amounted to about 8,000 tons, including 5,000 tons of open-hearth to the Burlington, being a portion of the inquiries mentioned last week. Specifications are coming in nicely, and sales of light rails also are amounting to a very fair tonnage in the aggregate. A feature of the week was an inquiry for 15,000 tons of tie plates, a very heavy tonnage for a single inquiry.

See Pittsburg report for prices on standard sections. On light rails, Chicago delivery, we quote as follows:

Light rails, 40 and 45-pound, $26; 30 and 35-pound, $26.75; 16, 20 and 25-pound, $27; 12-pound, $28. In lots of 250 to 500 tons a reduction of 60 cents a ton from these prices is made; lots of 500 tons and up carry a reduction of $1 a ton. Track supplies, f. o. b. Joliet, angle bars, 1.50c to 1.60c; railroad spikes, 1.75c to 1.85c; smaller size spikes, 1.85c to 1.95c base; track bolts, with square nuts, 2.15c to 2.20c; with hexagon nuts, 2.30c to 2.40c.

Cast Iron Pipe.—Prices are firm, and small lettings and routine business are said to be quite satisfactory for this time of year. The Cleveland contract for 2,000 tons went to the United States Cast Iron Pipe & Foundry Co. Railroad buying for conduits amounted to about 1,000 tons the past week. Prices are without change, as follows: Four-inch water pipe, $27.50; 6 to 14 inches, $26.50; larger sizes, $25.50; gas pipe, $1 a ton higher.

Wire Products.—Everything is moving smoothly, and orders are coming in in fair volume. Mills are about two weeks behind on their orders on barbed wire, on old specifications. We quote Chicago delivery, as follows:

Wire nails, jobbers' car lots, $1.98; retailers' carload lots, $2.03; retailers, less than carload lots, $2.13c; painted barb wire, jobbers' carload lots, $1.98; retailers, carload lots, $2.03; with 30c for galvanizing; plain wire to jobbers, carload lots, $1.78; staples, $1.98.

Old Material.—No marked change has been recorded in this market, the past week, but prices are firmer, due to the continued strengthening in all lines. There is a tendency to adhere to the advanced prices, and to be very optimistic as to still further advances. Stocks continue large, but they are in strong hands, and there seems to be no disposition to unload until a wider margin of profit is in sight. The Pullman Co. has been buying rather heavily, and this always lends much strength to the market. Quotations, gross tons, are as follows:

Old car wheels	16.25 to 16.50
Old iron rails	18.75 to 19.00
Rerolling rails (4 ft. and over)	16.25 to 16.50
Old steel rails (2 ft. and under)	16.00 to 16.25
Light section relayers, 45 lbs. and under subject to inspection	21.00 to 23.00
Relaying rails, subject to inspection	22.50 to 23.50
Frogs, switches and guards	15.00 to 15.25
Heavy melting steel	15.00 to 15.25

We quote, net tons, as follows:

No. 1 R. R. wrought	$14.50 to 14.75
No. 2 R. R. wrought	13.75 to 14.00
Arch bars and transoms	16.75 to 17.00
Knucklers, couplers and springs	14.00 to 14.25
Shafting	15.75 to 16.00
Iron car axles	19.25 to 19.50
Steel car axles	18.00 to 18.25
Locomotive tires	15.50 to 15.75
Dealers' forge	12.50 to 12.75
Pipes and flues	10.75 to 11.00
No. 1 cast, 150 lbs. and less	14.25 to 14.50
No. 1 busheling	11.75 to 12.00
No. 2 busheling	8.50 to 8.75
No. 1 boiler cut	10.75 to 11.00
Boiler punchings	13.75 to 14.00
Cast and mixed borings	6.75 to 7.25
Machine shop turnings	8.75 to 9.00
Railroad malleable	14.00 to 14.25
Agricultural malleable	12.75 to 13.00
Stove plate and light cast scrap	12.75 to 13.00
Angle bars, splices, etc. (iron)	17.25 to 17.50

CINCINNATI.

Less Interest in Pig Iron Market, but Prices are Firm.

Office of THE IRON TRADE REVIEW,
First National Bank Bldg., Aug. 10.

Pig Iron.—There is apparently less interest in the market this week than last, although the tone is firm and spot iron and August-September shipment cannot be bought under $13.00 Birmingham, while a week ago $12.50 could be done. The southern producers of pig iron are firm in their views and are usually limiting tonnage to be taken for any delivery. The price situation may be described as $13.00 Birmingham for the remainder of third quarter, $13.50 for fourth quarter, and nominally $13.50 Birmingham for first quarter of next year, although but few furnaces are willing to open their books for next year's delivery. Northern iron is quotable at $15.00 for No. 2 foundry at furnace for this year's delivery and $15.50 for first quarter of next year. It is possible that a little southern iron could be obtained at $13.00 Birmingham on shipments commencing at once and running through the year. Inquiry is fair and a number of buyers are inquiring for prices for last quarter and first quarter delivery; but inability on the part of furnace agents to quote for first quarter of next year makes it difficult to effect sales on such inquiries, as buyers are apparently more interested in covering for the first quarter than in the last quarter. Several inquiries for high silicon iron are under consideration and there is a fairly good volume of tonnage pending calling for deliveries in the rest of the year. An inquiry from St. Louis territory for 5,000 tons of northern basic, calling for deliveries beginning in November at the rate of 1,000 tons a month, is under consideration. Shipments on contracts are good and requests for hold-up shipments are exceptional. All reports indicate that consumption is gradually increasing. Sellers are not inclined to urge iron upon the market, and with a large number of melters covered for the present, as well as for fourth quarter, there seems to be but little to stimulate activity in buying until the furnaces decide to open their books for next year. The fourth quarter tonnage in connection with first quarter deliveries submitted by the buyers is evidently for the purpose of inducing furnaces to accept business on the basis of fourth quarter quotations, while furnaces do not seem inclined to commit themselves on this basis. We quote for prompt shipment and for rest of third quarter, delivered Cincinnati, based on freight rates of $3.25 from Birmingham and $1.20 from Ironton as follows:

Southern foundry No. 1	$16.75
Southern foundry No. 2	16.25
Southern foundry No. 3	15.75
Southern foundry No. 4	15.25
Southern No. 1 soft	16.75
Southern No. 2 soft	16.25
Southern gray forge	14.50 to 14.75
Northern No. 1 foundry	16.70
Northern No. 2 foundry	16.20
Northern No. 3 foundry	15.70
Jackson county 6 per cent silicon	18.70
Jackson county 8 per cent silicon	19.70
Jackson county 10 per cent silicon	20.70

Finished Material.—Specifications on contracts continue liberal and the mills are from 4 to 6 weeks behind on deliveries on a number of descriptions. Most of the jobbers and large consumers are covered with contracts and there is but little new tonnage being sold. Independants are generally holding quotations above the schedules of the leading interests. Jobbers report an excellent retail demand, which is stimulated by the mills being behind on deliveries.

Coke.—The market is firm in tone and some low quotations for prompt shipment coke have been withdrawn. In some districts the supply of coke on hand has been reduced, while in others there is some car shortage developing as a hindrance to prompt movement. There are few new contracts being closed, but some inquiries from consumers who want to cover for next year's requirements are being received. The following quotations represent the range of prices in the leading coke producing districts:

	Per Ton.
Wise county furnace coke	$1.60 to 1.85
Wise county foundry coke	2.00 to 2.25
Pocahontas furnace coke	1.65 to 1.85
Pocahontas foundry coke	1.90 to 2.25
Standard Connelisville furnace coke	1.75 to 2.00
Standard Connellsville foundry coke	2.00 to 2.25

Old Material.—The market is firm in tone but not particularly active. Some descriptions were advanced a week ago, but there is no material change in prices this week. Dealers quote as follows f. o. b. Cincinnati:

Old No. 1 R. R. wrought net tons	$14.00 to 14.50
No. 1 machinery, net tons	13.50 to 14.00
Old iron rails, gross tons	15.00 to 16.00
Old steel rails (re-rolling) gross tons	14.00 to 14.50
Old short lengths, gross tons	13.50 to 14.00
Old iron axles, net tons	17.00 to 17.50
Heavy melting scrap, gross tons	13.50 to 14.00
Stove plate, net tons	10.50 to 11.00
Heavy turnings, net	9.50 to 10.00
Cast borings, net tons	7.50 to 8.00
Car wheels	14.50 to 15.50

H. Walters & Sons, Ottawa, manufacturers of edge tools, have been incorporated with a capital stock of $350,000 by Morley P. Walters, Joseph E. Gravelle, James G. Walters and others.

PHILADELPHIA.

New Plan for Buying Scrap—New Price Records in Basic.

Aug. 10.

Pig Iron.—Basic continues the center of activity and has set new price records during the week, though transactions have shown the effect of the rapid advance by their more limited volume. There is apparently a marked scarcity of early delivery iron, particularly on the part of two or three steel interests which are melting at a much more rapid rate than anticipated and to which producers have fallen behind in deliveries. The result has been that several small lots have been taken on for early shipment at higher figures than have prevailed since the depression began: two moderate tonnages of Virginia basic were placed at an average of about $17.25, delivered into this territory, and there was some selling of Pennsylvania product at $17.50. It is understood, however, that one large inquiry recently circulated has been withdrawn, and there has been no heavy selling during the week at above $17.00, delivered. Low phosphorus iron is stronger, the minimum being $20.00 or $20.50, delivered into this territory. Foundry continues in healthy demand and current selling is chiefly on the basis of $17.25, delivered, although some business is being taken at a slightly lower figure. A number of producers are virtually out of the market for the remainder of the year and decline to quote for 1910 shipment; those who have iron to sell found the week an active one and totalled good bookings. Indications point to a considerable increase in operating capacity as soon as the unfavorable conditions of the heated season are over. We quote, delivery at Eastern Pennsylvania plants over the rest of the year, as follows:

No. 1X foundry	$17.50 to 18.00
No. 2X foundry	17.00 to 17.50
No. 2 plain	16.50 to 17.00
Standard gray forge	16.00 to 16.50
Basic	17.00 to 17.50
Low phosphorus	20.00 to 20.50
No. 2 Birmingham	16.25 to 16.75
No. 2X Virginia	17.00 to 17.50
No. 2 plain Virginia	16.50 to 17.00

Finished Materials.—The most encouraging feature of the week has been the very heavy buying by railroad interests of plain materials, indicating an attempt to replenish the low stocks at shops and other points: the Pennsylvania, Lehigh Valley and Reading have been particularly active in this respect and the B. & O. has put out good inquiries. It is understood that the B. & O. rail tonnage

has practically been placed and will call for 20,000 tons. This interest has placed an order with the Jones & Laughlin Steel Co. for 500 tons of sheet piling for a bridge at Cleveland. The local structural market has been featureless, for, with the exception of a few small projects nothing has developed; a number of good tonnage propositions in this city, in Scranton and in the territory south are still undecided. Plate orders continue to show a substantial increase and the new price level is being well adhered to. There is increasing difficulty in making prompt shipments and some mills have had considerable cancellation of tonnage on this account, as one or two local interests can still give early delivery. We quote structural shapes and plates, 1.55c to 1.60c; steel bars, 1.45c to 1.50c; bar iron, 1.45c to 1.50c; sheets, No. 28, 2.80c.

Old Materials.—The market is considerably excited over the joint buying arrangement entered into by most of the largest consumers of heavy melting scrap in this section. Details of the new arrangement, which have just become public, give the interested concerns as follows: Worth Bros. Co., Lukens Iron & Steel Co., Alan Wood Iron & Steel Co., Bethlehem Steel Co., Pennsylvania Steel Co., Phoenix Iron Co. and John A. Roebling's Sons Co.; their scrap requirements are to be purchased through Emanuel Dreifus & Co. Among the important interests reported as nonparties to the arrangement are the Eastern Steel Co., the Pencoyd plant of the American Bridge Co., the Harrisburg Pipe & Pipe Bending Co. and the Central Iron & Steel Co. We quote as follows:

Old steel rails (rerolling)	$17.50 to 18.00
No. 1 steel scrap	17.00 to 17.50
Old steel axles	22.50 to 23.00
Old iron axles	24.50 to 25.00
Old iron rails	20.00 to 21.00
Old car wheels	16.00 to 16.50
Choice scrap R. R. No. 1 wrought	19.00 to 19.50
No. 1 yard scrap	18.00 to 18.50
Machinery scrap	15.00 to 15.50
Low phosphorus scrap	20.00 to 20.50
Wrought iron pipe	16.00 to 16.50
No. 1 forge fire scrap	14.50 to 15.00
No. 2 forge fire scrap, ordinary	9.50 to 10.00
Wrought turnings	13.50 to 14.00
Axle turnings, heavy	14.00 to 15.00
Cast borings	11.00 to 12.00
Stove plates	12.50 to 13.00

BUFFALO.

Pig Iron Market Stronger—Numerous Building Projects.

Office of THE IRON TRADE REVIEW,
932 Ellicott Square, Aug. 10.

Pig Iron.—There has been no further advance in quotations since those named last week, but the general tone of the market has materially strengthened and it is hardly probable that the present prices will prevail for any great length of time. The iron shortage in the Pittsburg district and other Pennsylvania points added strength to the Buffalo market and numerous inquiries have come from those points to the local producers. Substantial tonnage has been placed in spite of the high freight rates existing between Buffalo and Pittsburg territory. While the maximum price on No. 2X foundry f. o. b. Buffalo is $15.75, there is not a great deal of iron being placed for prompt delivery at this figure. Prices on most of the tonnage of this grade approach nearer to the $16.00 mark and in many instances the maximum price of $16.25 has been obtained. A strong desire is manifested by many foundry interests with ready cash to cover their needs well into 1910 and inquiries for first quarter iron are becoming more numerous. Although no tonnage of any account has been placed for delivery during that period, it is likely substantial business of that character will be taken at an early date. Consumption of foundry iron in Buffalo has been running light; in fact, the increase anticipated by some of the leading foundry interests has fallen short. The activity at foundries is increasing at this time, but conditions are still far below normal. The production of pig iron in this district is greater than at any time in history of local iron. The only stack not operating is No. 7 at the Lackawanna Steel Co.'s plant and that furnace is undergoing repairs. The two new furnaces, one at the Wickwire Steel Co.'s plant and the other at the plant of the New York State Steel Co., are both in successful operation. The blast furnace at the works of the New York State Steel Co., is producing No. 1X and No. 2X foundry, but within a week will shift to basic, only for use by the company's billet and bloom mill and not for the general market. We quote f. o. b. Buffalo as follows:

No. 1X foundry	$16 25 to 16.75
No. 2X foundry	15.75 to 16.25
No. 2 plain	15.25 to 15.75
No. 3X foundry	15.00 to 15.25
Malleable Bessemer	15.50 to 16.00
Gray forge	15.00 to 15.25
Charcoal	19.50 to 20.50

Finished Products.—Specifications on fairly good new business are reported. The general tone of business is somewhat dull. A rather strong demand is observed for small bars for delivery within the next three or four months, especially for reinforcing purposes. The general structural situation is fully as quiet as it has been for several weeks past. The contract for the structural material to be used in the Men's Hotel, was awarded to Buffalo Structural Steel Co., lowest bidder on 500 tons.

The following structures are projected: Theater to cost $60,000, Albany, N. Y.; bridge, Oswego; six-story office building by James N. Byers, Buffalo; refinery to cost $50,000 by the Spencer Kellogg Co., Buffalo; theater to cost $40,000 by the Co-operative Amusement Co. Buffalo; two story factory by the McKinnon Chain Co.; six-story hospital by the city of Jamestown; synagogue by the Sons of Abraham, Albany; engine house, Hilton; manufacturing plant to cost $35,000 by the Syracuse Safe Co.; two schools to cost $105,000 by Syracuse; rug and carpet factory, Shuttleworth Bros., Amsterdam; glove factory, Louis Myers, Gloversville.

Contracts awarded are: Church and school, Depew, to M. A. Cwiklinski, Buffalo; hospital to cost $30,000, Rochester, to Anthony Link of Rochester; nurses' home and orphans' home, Syracuse, to Hueber Bros., Syracuse; rebuilding Hotel Royal, Utica, to the R. G. Loyd Co. Utica; club to cost $75,000, Amsterdam, to John T. Turner & Son of Amsterdam.

ST. LOUIS.

Pig Iron Firm and Furnaces Conservative Concerning Next Year.

Aug. 9.

Pig Iron.—Sales of pig iron in the St. Louis territory last week aggregated about 9,000 tons. The market is firm, and inquiries are out for deliveries over the remainder of the year and into next year, but the furnaces refrain from quoting prices as far ahead as 1910. The inquiry for 2,000 tons of basic for shipment over the remainder of the year and 3,000 tons for delivery over the first three months of 1910 is still out, but probably will be closed by the middle of this week. No. 2 Southern iron is firm at $12.50 to $13, Birmingham, for spot shipment, with very little being offered at the lower price. There was some little resale iron disposed of last week, but the price was not under $12.50. Ohio iron is firm at $15 for shipment in August and September, and at from $15 to 15.50 for last quarter delivery. One St. Louis firm sold 2,000 tons of malleable Bessemer last week for first half delivery, also 500 tons of foundry iron. Our quotations, delivered, to which the Birmingham freight of $3.75 has been added, follow:

No. 1 southern	$16.75 to 17.25
No. 2 southern	16.25 to 16.75
No. 3 southern	15.75 to 16.25
No. 4 southern	15.25 to 15.50

Coke.—Coke sales in the St. Louis territory totaled 3,000 tons last week for shipment over the rest of the year and the first quarter of next year. The best selected Connellsville 72-hour foundry coke is firm at $2 for spot delivery, and at $2.25 to $2.40 for shipment extending over the first quarter of 1910. Inquiries for 4,000 tons are pending for delivery up to Jan. 1. Furnace coke, 48-hour grade, is offered from Virginia as low as $1.60, ovens, for delivery up to August. Virginia foundry coke for balance of the year delivery is offered at from $1.70 to $2, ovens. The best Connellsville 48-hour furnace grade is firm at from $1.75 to $2, ovens. The freight to East St. Louis and St. Louis is $2.80, and $2.70 from the Virginia fields, when shipment is destined beyond St. Louis.

Old Material.—The market remains firmer at the following quotations:

Cast iron borings, free from foreign material, net tons	$ 5.00 to 5.50
Steel axle turnings, gross tons	11.00 to 12.00
Steel railroad axles, net tons	17.00 to 18.00
Iron railroad axles, net tons	18.50 to 19.50
Miscellaneous steel scrap, gross tons	10.00 to 11.00
Old car wheels, gross tons	15.00 to 15.50
No. 1 railroad cast scrap, net tons	11.00 to 11.50
Heavy machinery cast, net tons	13.00 to 13.50
Stove plate and light cast, net tons	10.00 to 10.50
Sheet iron, net tons, uncut	4.00 to 5.00
No. 1 railroad wrought, net tons	12.00 to 13.00
Railroad malleable, net tons	12.00 to 12.50
Heavy melting steel, net tons	11.00 to 12.00
Relaying rails, net tons	17.00 to 18.00

BIRMINGHAM, ALA.

Furnaces Not Anxious to Make Sales for Future Delivery.

Aug. 10.

With $13 per ton, No. 2 foundry, as the minimum and a steady line of inquiry being received for the product, $13.50 per ton is looked to as a price for southern iron in a short while now. There are some inquiries being received for 1910 delivery with no takers, as the manufacturers believe that there will be a still better price than that now mentioned when the buying for the first quarter of next year begins. There are very few furnace companies in the market now to sell immediate delivery iron, though the demand is fairly good yet, while only three of the furnace companies appear to be ready to sell for delivery during the last part of the year. The make is being improved steadily in this section, three furnaces having started making iron already this month. The 5,000 and more tons increase in the make for July as compared to the output the previous month will be improved on during August as compared with July. The furnaces in blast are doing exceptionally well, the production not only being satisfactory but the grade of the product being good. There is a steady outward movement of pig iron, because some of the iron sold several months ago to brokers and speculators is being moved out. The home consumption shows further improvement. The cast iron pipe trade activity is being followed by the soil pipe business.

The plant of the Sheffield Cast Iron Pipe Co. has resumed operations, giving employment to about 200 men. This plant had not been in operation for nearly two years.

No changes are reported in the old iron material quotations.

SEATTLE.

Prosperity is Slowly Returning on the Pacific Coast.

Office of THE IRON TRADE REVIEW, 302 Pioneer Building, Aug. 6.

The tide of prosperity is slowly flooding on the Pacific coast. The lumber tariff has been fixed at $1.25 per 1,000 and nearly all the disturbing elements have been swept away. The foundry melt is increasing slowly and the consumption of finished products is picking up. Foundries are running about 80 per cent capacity at present. Conditions are better on the north coast than in California; the San Francisco iron industry is hampered by union labor troubles. Conservative interests estimate that it will take until the middle of September for business on the Pacific coast to catch up with the pace set in the east.

Pig Iron.—The foundries are buying a little more freely for extended future delivery, although the non-arrival of some badly needed cargoes of European iron has somewhat shaken the confidence of buyers in the foreign product. The ship Zinita, with about 1,000 tons of English iron, is now two months overdue on Puget Sound and has been practically given up for lost. Local stocks are low; spot iron is firm. Foundry stocks are fairly heavy. Prices have not changed. We continue to quote in gross tons as follows:

English, Cleveland, No. 1, spot	$24,00 to 24.50
English, Cleveland, No. 1, to arrive Sept.	23.00 to 23.50
English, Cleveland No. 1, to arrive Dec.	21.50 to 22.50
Glengarnock, Scotch, to arrive September	25.00
Southern No. 2, domestic	23.00 to 23.50

Merchant Iron.—Sales of bars and light shapes are improving steadily, but prices have not yet been dragged out of the rut. All concerned agree that the conditions justify an advance, but no one is yet bold enough actually to make such an advance effective. Pacific coast prices are, proportionately, considerably below eastern market levels. Bar iron remains the weakest department in the western market. We quote base prices per 100 pounds, f. o. b. Seattle, as follows: Common iron bars, $2.10; soft steel bars, $2.20; machinery steel, $2.75; Norway iron, $3.50; angles, channels, zees and tees, under 3 inches, $2.75.

Old Material.—Reviving foundry activity is improving conditions in the old material market. Good foundry scrap is held close to $19. The market for wrought iron and scrap steel is also a little more active. We quote net tons, f. o. b. Seattle, as follows:

Foundry and machinery scrap	$19.00 to 20.00
Old car wheels	16.50 to 17.00
Railroad wrought	10.00 to 11.00
Country wrought and busheling	5.00 to 8.00

NEW YORK.

Malleable Foundries Inquiring—Structural Demand Declining.

Office of THE IRON TRADE REVIEW, Room 1005, No. 90 West St, Aug. 10.

Pig Iron.—The eastern market is featured just at present by a moderate let-up so far as current buying is concerned and by the prospect of considerable additional tonnage becoming operative within the next few weeks. Following the recent sharp advance in prices on practically all grades, there has been some cessation of buying, though the volume of inquiry shows little decrease and melters are evidently waiting to see how well the new level will be maintained before placing their orders. The scarcity of basic for prompt shipment, particularly acute in eastern Pennsylvania, has resulted in some buying from a producer fortunate enough to have a considerable accumulation at prices slightly above $17, delivered, and the aggregate tonnage placed for this shipment and for the first quarter has been considerable, though by no means large in comparison to orders placed during late July. Foundry, low phosphorus and pipe irons are firm at prices quoted below. Malleable foundries are sounding the market for their requirements over the first half of 1910 and find that $16, Buffalo, is apparently the minimum. Considerable idle capacity will become operative shortly. Oxford furnace has blown in and the Empire company will probably start one of the large Crane furnaces before the end of the month. The Thomas Iron Co. has arranged to operate another furnace, Warwick will probably blow in another in the early future, Emporium has gone in, and Belfont will

start before long. Only two Wharton stacks are operating. We quote, delivery at New York tidewater during the balance of the year, as follows:

Northern foundry No. 1	$17.50 to 18.00
No. 2X foundry	17.00 to 17.50
No. 2 plain	16.50 to 17.00
No. 2 southern foundry	16.75 to 17.25
Malleable	17.25 to 17.75
Gray forge	16.00 to 16.50

Finished Materials.—In point of new orders, the current business in structural materials is light as compared with that of the early summer, and there is apparently quite a general feeling that operations for the next several weeks and probably well into the fall will be of more moderate proportions. Such a reaction from the extremely vigorous buying of the past few months is only natural, in view of the fact that most plants are now so well booked ahead that additional business for delivery in time to enter into building operations this year cannot be taken on. The railroad interests seem to have covered the bulk of their requirements for the year and will be in the market only for small piecing-out lots. The leading interest reports that during July it bid on only about one-half the tonnage involved in June bids, and took only about one-half as much. At the beginning of August bids were pending on only about 90,000 tons, a very much smaller figure than at any other time during the summer, this being accounted for chiefly by the policy of withdrawing quotations promptly on a rising market. The larger interests have advanced fabricated prices to a living level, but the situation is still spotty, owing to the willingness of small shops here and there to continue the lower level. The American Bridge Co. plants are operating about 80 per cent of normal, which is about the maximum figure considering the difficulty in securing materials and the delay in the preparation of drawings.

A local contractor has secured the Twenty-second Regiment armory in this city, but the steel requirements, 2,000 tons, have not yet been placed. As noted briefly a week ago, the Metropolitan Bridge Co. has the contract for the St. Gabriel's parochial school, Thirty-sixth street and Fourth avenue, 300 tons; the Hinkle Iron Co. has a 1,000-ton apartment at Seventy-sixth street and Park avenue, and a 200-ton building at 127th street and Third avenue; and the A. E. Norton Co. has the Coleman building, 2,000 tons; on all of these projects Bethlehem sections will be employed. The Turner Construction Co. will erect two warehouses for the Bush Terminal Co. in Brooklyn, requiring a good tonnage of steel. The McClintic-Marshall Construction Co. will build a coal tipple requiring 350 tons at South Brownville, Pa.; the Men's hotel at Buffalo, 450 tons, has gone to the Buffalo Structural Steel Co.; the Louisville Bridge & Iron Co. will supply 500 tons for the manufacturing plant of B. F. Avery & Sons in that city; and numerous smaller orders have been placed.

Several good billet orders have been placed during the week and inquiry continues brisk. The new price level on shapes, plates and bars is being well maintained. We quote:

Angles, 3 to 6 inches x ¼-inch and heavier, 1.56c; beams, 3 to 15 inches, 1.56c; tees, 3 x ¼-inch and heavier, 1.56c; plates, carloads, tank, 1.56c; marine boiler, 1.86c; bar iron, 1.45c to 1.50c; soft steel bars, 1.51c; sheets, No. 28, black, 2.56c.

Railway Supplies.—Considerable activity is reported in rails, cars and locomotives, while a good scattering of small bridge orders is coming out. The Baldwin Locomotive Works has booked orders for over 50 locomotives from the Great Northern and Northern Pacific; its plant is now employing 12,000 men, and by Oct. 1 will probably be running full, night and day shift, employing 20,000. The New York Central has just put out inquiries for 1,500 triple hopper coke cars for the Pittsburg & Lake Erie. The Pennsylvania lines west have ordered 2,000 coke cars from the Standard Steel Car Co. and 600 from the Cambria Steel Co. The Baltimore & Ohio order, probably for 10,000 cars, will probably be placed before the end of the week. The Pennsylvania Steel Co. has secured orders for the Baltimore & Ohio bridge at Cleveland and the Albermarle bridge, while another independent interest has secured a 2,000-ton bridge order from the Norfolk & Western. The Pennsylvania has booked a 3,500-ton rail order for the Atlantic Coast Line, a 6,000-ton order for another road and a 300-ton girder rail order for a Connecticut line. It is believed that the Baltimore & Ohio rail order has been placed.

Ferro-Alloys.—The readjustment to the new tariff conditions is proceeding rather slowly, a large number of inquiries bearing the old schedule of duties still being under consideration. One lot of 500 tons of ferro-manganese for delivery over the first half has been purchased by an Ohio plant at slightly under $42.50, seaboard, old duty, which probably fairly represents the market for this delivery. Pending inquiries include one lot of 2,000 tons, another for eastern shipment of 1,000 tons and a number ranging from 500 tons down. A recent sale of 175 tons of ferro-silicon (50 per cent) for Chicago delivery is noted at $69.00, Pittsburg; an inquiry for 250 tons for delivery over the remainder of the year is in circulation. A few scattered sales of spiegeleisen are reported and there is reason to believe that accumulations are not so large as has been stated.

Cast Iron Pipe.—Prices are beginning to show some improvement, in line with the advance in raw materials. The Newburg letting, 1,800 tons of 30-inch, has been secured by the United States Cast Iron Pipe & Fdy. Co. New York City advertises letting on the 18th involving about 5,600 tons of pipe and 325 tons of specials. New Bedford, Mass., will open bids Aug. 17 on about 6,700 tons of assorted pipe and fittings.

Old Material.—Current sales are confined to extremely small lots and prices manifest little change. Spasmodic efforts at importation, taking advantage of the lowered tariff, are under discussion, but nothing definite has been done as yet. The customs authorities promise to continue their custom of compelling the importer to prove that the material can be used only as scrap before admitting it to that favored classification, a policy which in times past has rendered the bringing in of old steel rails, car wheels, etc., a rather hazardous undertaking. We quote, gross tons, New York delivery, as follows:

Old steel rails (rerolling)	$14.50 to 15.00
Relaying rails	19.00 to 19.50
Old car wheels	13.50 to 14.00
Old iron car axles	21.50 to 22.00
Old steel car axles	20.00 to 20.50
Heavy melting steel	14.00 to 14.50
No. 1 railroad wrought	15.00 to 15.50
Iron track scrap	13.00 to 13.50
Wrought pipe	13.00 to 13.50
Cast borings	8.00 to 8.50
Wrought turnings	10.00 to 10.50
Heavy cast scrap	12.50 to 13.00
Railroad malleable	11.50 to 12.00
Stove plate	10.00 to 10.50
Grate bars	10.50 to 11.00

CLEVELAND.

Bessemer Ore Almost Exhausted—Jobbers and Mills Alike Busy.

Office of THE IRON TRADE REVIEW,
Browning Building, Aug. 10.

Iron Ore.—The demand for ore has shown a marked increase during the past few days, and some of the leading sales agencies report that they have practically no choice Bessemer left, while there is no great abundance of non-Bessemer grades. Some sellers predict a decided shortage in Bessemer ores, especially old range. This is figuring on shipments of from 37,000,000 to 38,000,000 tons, and indicates the tremendous demand. Operating companies find it impossible to increase their output for the remainder of the

season for various reasons. THE IRON TRADE REVIEW's reports of sales of foreign ores have, of course, been read with interest in the Lake Superior ore circles, but there is no serious anxiety as to the encroachment of foreign ores.

On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $4.50; Mesabi Bessemer, $4.25; old range non-Bessemer, $3.70; Mesabi non-Bessemer, $3.50.

Pig Iron.—The heavy inquiry for basic and Bessemer pig iron coming from Pittsburg and Youngstown concerns has been the matter of absorbing interest to Cleveland selling agencies, which regard the situation as very much stronger than it was a week or two ago. Local furnaces are optimistic in their views, and are advancing quotations on foundry grades, on which the usual asking prices are as follows: Prompt No. 2, $16 at the furnace for outside delivery, and $16.50 delivered in Cleveland; first quarter, $16.50 at the furnace, and $16.75 delivered in the city. Sales have not been heavy, but there is constant inquiry of good volume, and engine concerns and other companies which have not been much interested in the market are now inquiring for good tonnages. We quote delivered in Cleveland as follows:

No. 1 foundry	$16.75 to 17.00
No. 2 foundry	16.25 to 16.50
No. 3 foundry	16.00 to 16.25
No. 2 southern	17.35
Gray forge	15.00 to 15.50
Bessemer	16.65 to 16.90
Lake Superior charcoal	19.50 to 20.00
Jackson Co. 8 per cent silvery	20.00

Coke.—The market is firm with prices tending upward. We quote spot furnace coke at $1.60 to $1.65 at the ovens, and for delivery over a period of six months, $1.85 to $1.90. High grade Connellsville foundry coke is held at $2 to $2.25 for immediate shipment, and $2.25 to $2.50 on contract. Some companies are slow to make contracts at present.

Finished Materials. — Both mill agencies and jobbers report very satisfactory business on all products. The contract of the city of Cleveland for 2,000 tons of cast iron pipe was awarded to the leading interest. The plate situation is strong, and plants in eastern Pennsylvania are able to ship into Ohio territory, obtaining from $2 to $3 premium above the Pittsburg quotations of 1.40c. This is possible owing to the fact that mills in the Pittsburg district are falling behind in their deliveries, although the plant of the Pressed Steel Car Co. has relieved pressure from that source. Unexpected obstacles have been made in the operation of the new 152-inch plate mill of the Otis Steel Co., and no plates have as yet been rolled. The contract for the structural steel for the new grand stand on the base ball grounds has been awarded by the Osborn Engineering Co. to the Forest City Steel & Iron Co. About 1,000 tons will be required, and Jones & Laughlin shapes will probably be used. Railroads have placed some very nice orders for bar iron. The Empire mill has now been running about a month, and the Union is on its second week of operation. The demand for sheets has improved somewhat, especially for blue annealed.

Old Material. — Prevailing quotations continue the same as during last week. While there was a fair amount of old material changing hands, it was mostly in small lots, there being a strong tendency for mills to wait for a decline in prices. Dealers hold that not only is any decline improbable, but on the other hand, that the next few months will bring a decided raise, some prophesying as high as $2 a ton on all old material. We quote f. o. b. Cleveland as follows:

Old iron rails	$17.50 to 18.00
Old steel rails (re-rolling)	15.50 to 16.00
Old steel rails (under 6 feet)	15.50 to 16.00
Old car wheels	15.50 to 16.00
Old steel boiler plate	13.50 to 14.00
Malleable iron (railroad)	15.50 to 16.00
Steel axles	18.50 to 19.00
Malleable iron (agricultural)	13.50 to 14.00
Heavy steel	15.25 to 15.75
Country mixed steel	13.00 to 13.50
Low phosphorus	16.00 to 16.50

We quote, net tons, as follows:

No. 1 R. R. wrought	$14.50 to 15.00
No. 1 busheling	13.00 to 13.50
No. 1 machine cast	12.50 to 13.00
Iron axles	18.00 to 18.50
Axle turnings	11.00 to 11.50
Machine shop turnings	9.50 to 10.00
Grate bars	11.50 to 12.00
Pipes and flues	12.00 to 12.50
Tank iron	11.00 to 11.50
Hoop and band iron	9.00 to 9.50
Sheet iron	8.00 to 8.50
Wrought drilling	9.50 to 10.00
Stove plate	11.00 to 12.00
Cast borings	8.00 to 8.50

BRITISH IRON MARKET.

Collapse of Sheet Combine Brings Chaos—Conditions Generally Unsatisfactory.

Office of THE IRON TRADE REVIEW, Prince's Chambers, Corporation St., Birmingham, England, July 31.

The pig iron trade has undergone a slight reaction during the week, mainly due to the fact that certain weak holders of stocks finding prices in Cleveland at 49s 3d ($12.06) rushed to realize them, and this brought down prices. The result was assisted also by the holding off of consumers, whose confidence was shaken by the nervous speculators. But there has been some recovery, so that selling prices are now 49s 1d ($12.02), with 49s 4d ($12.08) and 49s 9d ($12.18) three months. There is no great amount of iron on offer. The stores at Connal's continue to increase, the amount now being 258,937 tons. Apparently the consistently good reports from America are helping to maintain prices. No great amount of forward buying goes on, the market being peculiar, and neither buyers nor sellers desiring long contracts.

The market is being disturbed somewhat by the prospects of labor troubles in Sweden, whence a great deal of the ore is obtained. The great strike may affect 200,000 workmen.

The sheet collapse has on the whole had a bad influence. A number of makers are making no profit at all out of the make. It is hoped that the naval demand may have the effect of raising the tone of the hematite market.

The general tone of the iron and steel trade continues far from strong. In the Midlands the collapse of the sheet agreement has brought chaos in prices, so that this week they have been quoted at £10 5s instead of £12 10s, the figure lately prevailing. Members of the association express their intention of driving out of the trade those whose underselling smashed the price agreement and already it is reported that three or four mills have stopped. A big fight is in prospect which will be a fine gold-mine for consumers.

PRESSED STEEL CAR CO. STRIKE.

Some concessions have been granted the striking employes at the McKees Rocks plant of the Pressed Steel Car Co., but the main points at issue that the rules of payment be modified and that the wage scale in effect early in 1907 be restored, have not been settled. The men are standing very firm in their demands and are now causing little disturbance of the partial operations of the plant. A statement just issued by General Manager James B. Rider of the company's position relative to the petition of the strikers is as follows: "No demands made by any committees will be considered and there will be no changes of rules or rates of wages. All individual complaints or misunderstandings have or will receive careful attention or investigation at the company's information bureau and interpreter's office. All employes are entitled to fair treatment and will get it."

The Edge Moor Iron Co., Edge Moor, Delaware, recently received an order from the Metropolitan Electric Co., Reading, Pa., for 16 Edge Moor boilers of 625 horsepower each.

METAL MARKETS.

ST. LOUIS.

Aug. 9.

Lead and Zinc.—The total valuation of lead and zinc ores from the Missouri-Kansas-Oklahoma district last week was $341,556, the largest of the year in pounds and value. The highest price paid for blende was $48 on an assay base of $46 a ton for 60 per cent grades. The base price of $46 was the highest of the year, while $48 was paid only once before, and that was for a single bin. The offerings the preceding week ranged down from $46 to $44. An immediate effect in the district was felt by the signing of the tariff bill, placing a duty on zinc ore ranging down 1 cent a pound. The demand for zinc became heavy the day the bill was signed, and large quantities of surplus ore were shipped to the smelters. The higher price was partly due to the sudden rise in St. Louis spelter to $5.70. Many mines that could not make a profit when ore was low have been induced to begin operations again by the strong market. Shipments of calamine were extremely heavy. The base for 40 per cent grades was decidedly stronger, ranging from $22 to $24 a ton, with many choice grades bringing $31.

The best price for lead ore was $57 a ton—an advance of $1, with only medium shipments. The prevailing base price for 80 per cent grades was $56. The week closed with St. Louis pig lead strong at $4.25.

CHICAGO.

Aug. 10.

There have been no unusual features to mention in this market, this week. Copper has been in only ordinary demand, and that for spot stock, there being scarcely anything doing in future requirements. The market has been stronger, wholly from speculative influences, but, at this writing, prices show no change from last week's level. Spelter is stronger, through the elimination of small lots from the market, which have been picked up by dealers and consumers. For some time dealers have been trying to secure better prices for their stocks, but have been unable to do so, because of the presence in the market of these small lots. The result of the absorption of the latter has been an advance in the price of spelter. We quote as follows:

Lake copper, carload lots, 13½c to 13¾c; casting copper, 13⅛c to 13¼c; smaller lots, ¼c to ¾c higher. Spelter, 5.65c to 5.70c; lead, desilverized, 4.35c to 4.40c in 50-ton lots; corroding, 4.60c to 4.65c in 50-ton lots; car lots, 2¼c per 100 pounds higher; sheet zinc, $7.25 list f. o. b. LaSalle in car lots of 600-pound casks; pig tin, 31½c to 32c; Cookson's antimony, 10½c; other grades, 9¾c to 10¼c.

Old Metals.—This market has been quiet, and former prices still prevail. We quote as follows:

Copper wire, 11¾c to 12c; heavy copper, 11½c to 11¾c; light copper, 10¾c to 11c; heavy red brass, 10¾c to 11c; heavy yellow brass, 8½c; light brass, 6¼c; No. 1 red brass borings, 9c to 9¼c; No. 1 yellow brass borings, 7¾c; brass clippings, 8¼c; tea lead, 3.40c; lead scrap, 3.80c; zinc, 3.60c; tin pipe, 24½c; tin foil, 23c; pewter, 17½c; electrotype plates, free from wood, 4c; electrotype dross, 2.90c; stereotype plates, 4⅛c; stereotype dross, 3c; prime slab zinc dross, $60 per ton.

NEW YORK.

Aug. 10.

Copper.—In view of the steady increase in consumption, the copper market is ruling strong and a healthy volume of business is coming out all the while. On the New York Metal Exchange late sales are reported at the following range of prices for standard metal; Spot, 12.65c to 12.80c; August, 12.60c to 12.85c; September, 12.62½c to 12.95c; October, 12.65c to 13c.

Pig Tin.—Spot metal is obtainable at 29¼c to 29½c. The tone is extremely good on both sides of the Atlantic and there is active buying both here and in Europe.

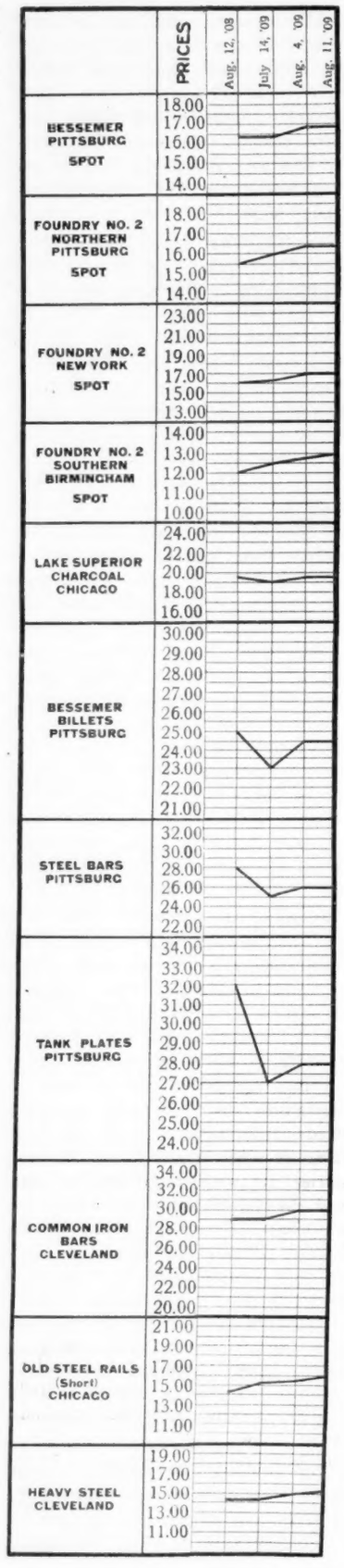
Pig Lead.—The market is steady at 4.25c to 4.30c, New York, prices being slightly lower than a week ago because of some pressure to sell by local dealers.

Spelter.—Spot is quoted at 5.55c to 5.80c, New York, and the price level is steadily advancing on an urgent inquiry.

Antimony.—Cookson's, 8¼c to 8½c; Hallett's, 7½c to 7¾c; ordinary brands, 7¼c to 7½c.

Enlarging Capacity.—The American Vanadium Co., Pittsburg, is enlarging the capacity of its reduction plant at Bridgeville, Pa., to meet the requirements of an expanding trade. The company is also contemplating the establishment of a plant in England to serve its patronage in that country. James J. Flannery, president of the company, accompanied by his son and a corps of engineers, has gone to the mines of the company in Peru, where the supplies of vanadium are obtained.

PRICE CHART.



OHIO ORE DEVELOPMENTS.

As the result of recent exploration work on the properties of the McGugin Iron & Coal Co., Olive Furnace, Ohio, some remarkable mineral deposits have been proven up and negotiations are now on looking to their development on an extensive scale. These comprise some 18,000 acres located in Lawrenee and Scioto counties, only a few miles from the Ohio river. A considerable part of this area is underlaid with three important veins of coal, known locally as Nos. 4, 5 and 6. No. 4 vein, which is a superior grade of steam coal, has an average thickness of about 4 feet and can be reached by drifting. Some distance above this occurs a vein of No. 5 or Lower Kittanning coal, running from 3 to 4 feet in thickness, of a grade which has found a ready market for steam producing purposes. From 30 to 60 feet higher, lies a workable vein of No. 6 or Middle Kittanning, known locally as Sheridan coal, which is high in carbon, low in sulphur and is suitable for blast furnace use as well as for general purposes. Several local deposits of domestic coal also occur on these properties.

Immediately above the No. 4 vein, is from seven to nine feet of limestone suitable for blast furnace use and of sufficient purity to render it well adapted for the manufacture of cement, for which several plants have been located in this immediate district during the past two or three years. In taking out the coal, this limestone vein is exposed, so that the cost of breaking it down and handling it constitutes the only item of expense in its recovery.

The limestone is overlaid with a considerable vein of iron ore which comes down with the stone, leaving an excellent roof of sandstone and requiring practically no timbering. This is the ore which was principally utilized by the numerous charcoal furnaces which operated in this region 50 years ago. Samples recently analyzed at the laboratories of two neighboring furnaces showed the following:

Metallic iron	56.61	56.52
Silica	4.45	3.50
Alumina		0.20
Phosphorus	0.223	0.238
Manganese	0.74	0.79
Lime	not given	trace
Magnesia	not given	trace
Sulphur	0.134	trace
Loss by ignition	13.97	not given

Higher up in the hill is a considerable acreage of what is known as red-band ore, of which a typical analysis is given below:

Metallic Iron	52.07
Silica	6.20
Alumina	2.30
Phosphorus	0.506
Manganese	0.32
Lime	0.15
Magnesia	0.17
Sulphur	0.13

On these properties there is also considerable silicious or block ores, found in thin veins near the surface. There are two charcoal stacks on these properties, several well defined beds of a superior grade of fire clay, and, at a depth of 140 feet, a deposit of marble ranging from 13 to 35 feet in thickness.

PENNSYLVANIA RAILROAD IMPROVEMENTS.

The Pennsylvania lines west of Pittsburg have just started work on some very important double-tracking and grade revision, designed especially to facilitate the movement of traffic on the Pittsburg, Chicago, Cincinnati & St. Louis railroad between Columbus and Chicago on the one hand, and between Columbus, Indianapolis and St. Louis on the other.

The first of these undertakings involves the double-tracking of 99 miles between Horatio and Onward.

These improvements have been rendered necessary by the development of the steel plant at Gary, Ind., where a very large amount of coal and coke from the West Virginia coal fields is used. The cost of this undertaking will be about $3,000,000. It is expected that the tracks will be in use by the summer of 1910. With the completion of this work the Pennsylvania lines west of Pittsburg will have an alternative double track road between Pittsburg and Chicago, as the entire line is already double tracked except between these two points, and about 6 miles through Piqua, O.

To facilitate the movement west of Columbus destined for Indianapolis and other points for the southwest, the 63 miles between Richmond and Irvington, Ind., are to be double-tracked and all grades reduced, at an estimated cost of $4,000,000.

The transmission dynamometer invented and patented by Prof. W. H. Kenerson, and illustrated and described by him in a paper read before the meeting of the American Society of Mechanical Engineers, held at Washington in May last, is being manufactured and placed on the market by the Builders Iron Foundry Co., of Providence, R. I.

The Heroult electric furnace installation which the Steel Corporation is making at Worcester, Mass., will probably not be ready for operation before Oct. 1. The furnace will be operated on electric current secured from an outside source and considerable delay has arisen in this connection.

HEAVY ORE SHIPMENTS IN JULY.

Notwithstanding cloudbursts and washouts on the ranges which crippled Duluth and Ashland for a week in July, the ore shipments of that month were 6,693,025 tons, which is the second largest shipment of any month in the history of the trade, the record being made in August, 1907, when 6,806,810 tons were moved. As ore is now moving with wonderful celerity, it is expected that the present month will establish a new record. Shipments to Aug. 1 show an increase of 8,160,069 tons over the corresponding period last year and are within 2,139,391 tons of the record shipments of 1907. No difficulty whatever will be experienced in equalling or eclipsing the 1907 record. It looks now as if it would be surpassed, the present intention of shippers being to move as much ore as they can. There could be no better indication of a resumption of prosperity than this. Following are the figures:

IRON ORE SHIPMENTS, JULY, 1909.

	July, 1909.	July, 1908.	July, 1907.
Escanaba	884,271	483,552	988,664
Marquette	450,736	226,775	580,746
Ashland	449,163	321,361	657,750
Superior	1,111,533	633,224	762,753
Duluth	2,249,410	1,655,125	1,057,319
Two Harbors	1,547,912	1,044,246	801,885
Total	6,693,025	4,364,283	4,849,117

Increase of 1909 over 1908..2,328,742 tons.

	To Aug. 1, 1909.	To Aug. 1, 1908.	To Aug. 1, 1907.
Escanaba	2,016,505	754,293	2,812,879
Marquette	870,961	345,789	1,349,805
Ashland	1,061,187	592,939	1,707,107
Superior	2,576,110	1,111,887	3,081,664
Duluth	5,434,135	2,819,934	5,151,365
Two Harbors	3,436,452	1,610,439	3,431,921
Total	15,395,350	7,235,281	17,534,741

Increase of 1909 over 1908..8,160,069 tons.

Will Install "S & N" Beam Shear, —The first "S & N" beam shear for cutting Bethlehem beams will be installed in the plant of the New England Structural Co. in East Everett, Mass. The "S & N" shear has been in successful operation in Germany, where the Differdingen mills are rolling beams under the Grey patents. The machine which will be in operation in about eight weeks will have the following capacity: Standard I beams 7 to 20 inches, 80 pounds. Bethlehem B sections up to 18 inches and with special tools B20 and B20a. Channels up to 15 inches and angles up to 6 x 6 x ¾ inches. The machine requires 20 horsepower for its maximum capacity, making a cut in 15 to 25 seconds.

The "S & N" beam shears are built by Schulze & Nauman in Goethen, Germany, who are represented in America by the Wiener Machinery Co., 50 Church street, New York city.

STEEL RAIL SPECIFICATIONS.

Of the Harriman Lines for Both Bessemer and Open-Hearth.

The specifications to which the Harriman lines are ordering their Bessemer and open-hearth steel rails differ in few details from those adopted by the American Society for Testing Materials, published in a supplement to THE IRON TRADE REVIEW, July 8, 1909. The points of difference between the two specifications for 90-pound Bessemer rails are as follows:

Paragraph 1, clause D, of the Harriman specifications relative to shearing the ends of blooms, closes with the following sentence, which does not appear in the corresponding clause of the standard specifications:

"If, by the use of any improvements in the process of making ingots, the defects known as 'piping' shall be prevented, the above shearing requirements may be modified."

Difference in the requirements of chemical composition are shown in the following tables:

	Harriman percentage.	Standard percentage.
Carbon	0.55 to 0.65*	0.43 to 0.53
Manganese	0.80 to 1.05	0.80 to 1.10
Phosphorus shall not exceed	0.085*	0.10†
Silicon shall not exceed	0.20	0.20

Relative to the drop test, the Harriman specifications require that "the test piece shall be taken from the top of the ingot;" no limits are placed upon the temperature of the test piece. The standard specifications omit the first item, and specify that "the temperature of the test pieces when tested shall not be less than 60 degrees Fahr. or greater than 120 degrees Fahr. The testing shall proceed concurrently with the operation of the mill."

The Harriman specifications state that complete chemical analyses every 24 hours "shall be made on drillings taken from small test ingots," to which the standard specifications add, "the drillings shall be taken at a distance of not less than ¼ inch beneath the surface of said test ingots."

The Harriman specifications permit a deviation of not more than 4 inches from a straight line throughout the length of a 33-foot rail, as compared with 5 inches deviation allowed by the standard specifications.

The final sentence of paragraph 13 of the Harriman specifications does not appear in the corresponding paragraph of the standard specifications, and is as follows: "Rails to be stamped on the web consecutively, A, B, C, etc., the rail from the top of the ingot being A, B next, etc. All rails from the top of the ingot; that is, 'A' rails, shall have the top of the flange at each end painted yellow."

Regarding No. 2 rails, the Harriman specifications require that "Rails shall not be accepted as No. 2 rails having flaws of more than one-quarter (¼) of an inch in depth in the head or more than one-half (½) of an inch in depth in the base. Should flaws of less extent be so numerous, or of such a character, in the judgment of the inspector, as to render any rail unfit for recognized No. 2 rail uses, it shall be rejected."

The Harriman specifications for 90-pound, open-hearth steel rails differ from the standard specifications mainly in points of chemical composition and manner of testing. The chemical analyses, as specified by the Harriman lines and the American Society for Testing Materials are as follows:

	Harriman percentage.	Standard percentage.
Carbon	0.63 to 0.76	0.59 to 0.72
Manganese	0.70 to 1.00	0.60 to 0.90
Phosphorus shall not exceed	0.04	0.04
Silicon shall not exceed	0.20	0.20

*Where mills cannot furnish steel rails with a phosphorus content less than 0.10 per cent carbon shall be 0.50 to 0.60 per cent.

†For each decrease of 0.003 per cent in phosphorus down to 0.03 per cent phosphorus, an increase of 0.01 per cent carbon will be accepted.

NEW BLAST FURNACE

Will be Erected by Youngstown Sheet & Tube Co.—Alice Stack Sold

A new modern blast furnace of the type of the two stacks recently completed by the company is to be erected at Youngstown by the Youngstown Sheet & Tube Co. to replace the pig iron capacity which will be lost by the transfer of the Alice stack at Sharpsville, Pa., to the West Foundry Co., of Sharpsville. The transaction for the sale of the Alice furnace to the West company has just been consummated, but possession will not be given until July 1, 1910. At the present time, the West foundry obtains pig iron in the form of hot metal from the furnaces of the Shenango Furnace Co., which are located near its plant. The Alice furnace was acquired by the Youngstown Sheet & Tube Co. from Pickands-Mather & Co. about seven years ago and has been operated quite steadily. It is in blast at the present time. Its daily capacity is about 200 tons. The new furnace to be built at Youngstown will be of the large modern type and will have an output of about 600 tons daily. It will be known as stack C, as A and B were completed and blown in last year.

EMPLOYERRS' LIABILITY CONFERENCE.

The Hon. George M. Gillette, vice president of the Minnesota Steel & Machinery Co., and president of the Employers' Association of Minnesota, and W. E. McEwen, a journalist of Duluth, Minn., were unanimously chosen by the conference which was held at Atlantic City, July 29-30 and 31, as special delegates to make a tour of Europe for the purpose of securing information with regard to conditions existing in foreign countries between the employer and the employe. They will report upon their return to the other commissioners on employers' liability and the cause and effect of unemployed labor.

The Atlantic City conference was the outgrowth of a desire on the part of the twenty-five commissioners representing various states to get together in conference upon the work they have in hand. George W. Smith, manager of the Buffalo traffic department of the Lackawanna Steel Co., and Prof. H. R. Seager, of Columbia University, are the New York state special commissioners.

The action of the governors of the several states interested is the outcome of a law passed in England a year ago fixing the liability of employers in case of accidents and it is expected that some sort of legislation, both state and federal, will result from the reports to be made by the commissioners to the states which they represent. Such legislation would place definitely the responsibility and the liability of all persons, corporations or individuals, employing labor of any kind for such accidents as may occur to the employe while at work in the employer's plant.

Gobeille's "Vanity Book".—One always expects something interesting and attractive when Joseph Leon Gobeille uses printers' ink, and he has certainly lived up to his reputation in the publication of a limited edition of what he calls his little "Vanity Book", containing "pleasant paragraphs penned by prominent persons, privately printed and published by permission, by the Gobeille Pattern Co., Niagara Falls, N. Y.," of which Mr. Gobeille is manager. These paragraphs give some idea, but can not adequately disclose to the full extent the high opinion in which Mr. Gobeille is held by his countless friends, some of whom sent him greetings when he became connected with the Niagara Falls concern, and thus unexpectedly got their names into a very handsome booklet.

NEW RECORDS

Will be Made by Corporation this Month—Rail and Car Orders.

(Special Telegram.)

New York, N. Y., Aug. 11.—United States Steel Corporation records both in ore movement and pig iron production are certain to be broken during August. The former would have been broken in July but for washouts on the Mesabi range. Every first class furnace of the corporation in the north is now in blast and the operating percentage over entire country is well over 92. The practical maximum is 95. Five of the idle stacks are in the south.

The Baltimore & Ohio has bought 20,000 tons of rails from the Corporation and 10,000 from another interest. The Gould lines have ordered about 20,000 tons and the Chicago Great Western 10,000 tons of open-hearth from the Corporation for early delivery. Inquiries for next year are now coming out and there is a brisk demand for prompt shipment.

During the last week in July, orders were placed for over 20,000 cars. Heavy inquiry continues.

OBITUARY.

Col. Albert A. Pope, the famous manufacturer of bicycles, died at his summer home in Cohasset Aug. 10. His health had been failing for a considerable time on account of the financial trouble that darkened the last days of his brilliant career. Col. Pope was born in Boston May 20, 1843, and began business life as a clerk in a shoe finding store at $4 a week. He served in the rebellion and was twice brevetted for gallantry. In 1876 he returned to the shoe finding business, founded the Pope Mfg. Co. in 1877, and began handling bicycles the same year, began manufacturing bicycles in 1879 and established himself as a recognized leader in that line. Out of the bicycle business grew his interest in the good roads movement in which he was prominent. In the days of his greatest prosperity, he was a director of many corporations.

Charles C. Schreiber, vice president and general manager of the L. Schreiber & Sons Co., foundrymen, of Cincinnati, died at his home in that city, Aug. 8. The deceased has been in ill health for the past six years. He was the eldest son of Leonard Schreiber, founder and president of the L. Schreiber & Sons Co. He entered his father's business when quite young and his entire business career was devoted to the development of the business of the company. He received only a common school education and was a self-made, self-educated man, who through his efforts and industry developed unusual capacity so that he became in time the real head of the business, his father, while still living, depending upon the son for the direction of the affairs of the company.

Judge Silas W. Lamoreaux, of Beaver Dam, Wis., owner of the controlling interest in the Beaver Dam Malleable Iron Co., died Thursday evening, Aug. 5, after a long illness from diabetes. Judge Lamoreaux was born in Madison county, New York, on March 8, 1843, and came to Wisconsin in 1852. He was admitted to the bar at 21 years. In 1864 he enlisted and participated in the hardest engagements of the Army of the Potomac. He was a member of the legislature in 1872

CHAS. C. SCHREIBER.

to 1876 and in 1877 was elected county judge. He was appointed United States land commissioner by President Grover Cleveland. He founded the Beaver Dam malleable iron works, which today employs 750 men. He also was president of the German National bank of Beaver Dam. He was noted for his philanthropy.

T. H. Sears, machinery manufacturer, Holyoke, Mass., died at his home July 30, aged 58 years.

Maximilian Mulhall, manager of the Thatcher Furnace Co., New York, died at Newport July 30 of appendicitis. He was born in England in 1874.

W. B. Seward, a pioneer iron founder of southern Indiana, died in Bloomington, Ind., Aug. 1. He was one of the commissioners appointed by the governor to build the Indiana state capitol.

BETHLEHEM STEEL IMPROVEMENTS.

Although his plans are not entirely complete, Charles M. Schwab has made a statement in regard to extensive improvements to be made at the plant of the Bethlehem Steel Co. in the early future. Two new blast furnaces will be built in addition to the two now being rebuilt, possibly on the site now occupied by two of the older furnaces. Ten 50-ton basic open hearth furnaces will be added to the Saucon plant, doubling its capacity and meeting the shortage of steel from which the works are now suffering. The improvements will also include the installation of a new structural mill for the rolling of smaller shapes, 6 to 12-inch beams, allowing the entire capacity of the present Grey mill to be devoted to the rolling of the larger sections. This new mill will occupy the present standard structural mill, as this will be torn out and the manufacture of the old standard section will be abandoned. The estimated outlay is $5,000,000.

CONVENTION OF AMERICAN BOILER MANUFACTURERS' ASSOCIATION.

The twenty-first annual convention of the American Boiler Manufacturers' Association was held in Detroit on Aug. 10, 11 and 12, with about 60 members and a number of guests in attendance. The convention was called to order at 10 o'clock A. M. Tuesday, August 10, by the president, Col. E. D. Meier, and was welcomed by Mayor Breitmeyer, whose address was responded to by the president. The morning session was concluded by the report of the committee on topical questions and discussion of same. The afternoon session Tuesday and morning session Wednesday were devoted largely to committee work. This was followed by discussion of important questions relative to boiler inspection and construction as viewed by members of the association and municipal inspectors.

A more complete report of the proceedings will appear in the next issue of THE IRON TRADE REVIEW.

A new deposit of iron ore has been discovered in Weld county, Colo., on state school land lying between the Burlington and the Union Pacific railroads. The discovery was made by Walter D. Salter, assistant city engineer of Denver, and A. J. Moreland, civil engineer. Samples have been turned over to the Colorado Fuel & Iron Co. and tests are being made.

PERSONALS.

William H. Lindsey, who has been assistant to the president of the Napier Iron Works, Nashville, Tenn., has just been elected vice president of the company. He has also been selected an officer of affiliated companies, vice president of the Crescent Coal Co. and president of the Dealers' Fuel Co., all of Nashville. Mr. Lindsey is a young man just entering the 30's, and since he was but a lad has been in the employ successively of the old Southern Iron Works, the Central Iron Co. and the Buffalo Iron Co. He served as private secretary to Col. E. W. Cole until 1899, then became secretary to President Whiteford R. Cole of the Napier company.

George C. Fogwell has been appointed district sales agent in charge of the Philadelphia office of the Jones & Laughlin Steel Co., succeeding the late F. M. Campbell. Mr. Fogwell had been assistant in this office since its establishment in 1903; prior to that time he was for three and one half years assistant purchasing agent of the New York Ship Building Co., and before that was for several years in the purchasing department of the Edge Moor Bridge Works, Wilmington, Del., now a part of the American Bridge Co.

Geo. E. Slater, who has been connected with the sales force of the steel bar department of the Carnegie Steel Co. at Pittsburg, has been attached to the St. Paul office of the company. E. S. Mills, formerly of the St. Paul office, has been transferred to Chicago where he has opened an office to handle the Carnegie specialties, including steel wheels, steel ties, steel piling, etc. The changes were effective August 1.

T. L. Powell, formerly connected with the St. Louis office of the Hickman-Williams Co., has been placed in charge of the Birmingham office of that concern, and he will be succeeded by Ray Fox, of the St. Louis office. Mr. Fox has traveled out of the St. Louis office of the Hickman-Williams Co. for several years.

J. B. Rider has been appointed general manager of the Pressed Steel Car Co., Pittsburg, and J. B. Maher has been made general agent in charge of the sales department. Mr. Rider has been assistant to the vice president and has acted as general superintendent.

John Daker Jr., who has represented the Domhoff & Joyce Co., Cincinnati, in the Detroit district for some time, will, effective August 1, represent Hickman, Williams & Co., pig iron merchants, Chicago, in the same territory.

Thomas F. Meek, vice president and sales manager of the Detroit Steel Casting Co., Detroit, Mich., has resigned.

Herman D. Lapp, of Sopron, Hungary, is traveling in this country, making a study of American foundry practice. Mr. Lapp is connected with the Eisenwarenfabriks-Actiengeselschaft, of Sopron and Graz. His company is building a new foundry in Sopron, at an expenditure of $300,000, which, if built in America, would mean an outlay of $1,000,000.

A. W. Archer, formerly employed by the McAdoo interests, New York, in connection with the construction of the Hudson river tunnels and terminals, has become associated with the Carnegie Steel Co. in the selling of sheet steel piling. Mr. Archer has had a wide experience in sub-structure work.

J. A. Lanigan, who has been superintendent of the iron, steel and brass foundries of the Whitney Iron Works, New Orleans, has accepted the position of superintendent of the new iron, steel and brass foundry that is being built by the Twin City Rapid Transit Co., St. Paul, Minn.

D. B. Marwick, special steel expert of the A. O. Smith Co., manufacturer of pressed steel automobile frames, Milwaukee, has resigned to accept the position of general manager of the Stanley Steel Works, New Britain, Conn.

J. Kent Smith, who has attained a wide reputation through his experiments and exploitation of vanadium, has left Pittsburg to take up his residence in England where he will continue this line of work in an engineering capacity.

M. A. Richards, superintendent of the Kinney mine on the Mesabi range, owned by the Republic Iron & Steel Co., has resigned to take a position with the Higgins estate which owns ore lands in Michigan and Minnesota.

J. A. Gearhart, recently material inspector for the Pennsylvania railroad in the Pittsburg district, has become a part of the organization of the Gulick-Henderson Co., inspecting engineers, Pittsburg.

Asa W. Whitney, recently secretary and metallurgist of the Sanford-Day Iron Works, Knoxville, Tenn., has become associated with the Enterprise Foundry & Machine Works, Bristol, Tenn.

George H. Griffiths, associate editor of THE IRON TRADE REVIEW, Chicago, sailed Wednesday on the Campania. He will spend a month in England.

SCARCITY OF BESSEMER IRON,

And Also Bessemer Ore—High Price Quoted on Basic for Next Year.

(Special Telegram.)

Pittsburg, Pa., Aug. 11.—Recent buying has brought about a scarcity of Bessemer iron obtainable at prevailing prices in the Mahoning and Shenango valleys and adjacent districts, and unsold iron is being held for higher quotations. A number of furnaces, anticipating a limited demand for Bessemer iron, have made no arrangements for Bessemer ores. Some are contemplating making basic instead. It is believed that not a great deal of surplus Bessemer ore has been mined. Some of the idle furnaces in the valley which usually run on Bessemer are preparing to resume, as the market is approaching their idea of prices.

An additional sale of 3,000 tons of basic was made at $15.25. A western melter has also disposed of an inquiry for 9,000 tons of basic for this year, but this is in the form of a specification on an extended contract. Including the latter, which is scarcely a bona fide transaction, sales of steel making iron foot about 35,000 tons. There are unconfirmed reports of others having been made. It is understood that the Standard Steel Car Co. has received a quotation of $18 valley on its inquiry for 100,000 tons, 1910 delivery.

Sales Agency for Allen Steel.—Edgar Allen & Co., Ltd., Sheffield, Eng., manufacturers of Allen's air hardening tool steel, etc., announce that they terminated June 30 last the sales agency of their products in the United States held for a number of years past by Edwin R. Kent & Co. Hereafter, the company's business in this country will be transacted under its own name and personal management, with J. C. Ward, formerly of Sheffield, and a director of the company, in active charge. His headquarters will be in Chicago at 23 West Randolph street. The New York office at 282 Pearl street will be continued as before. Hereafter, the Allen steels can only be obtained through the company's regularly established branch offices. The officers and directors of this firm are as follows: Wm. Edgar Allen, president; Robert Woodward, Alfred E. Wells, Frederick A. Warlow, William Crosby, C. K. Everitt, J. Francis Moss and J. C. Ward.

Some New High Records Made

The average price of stocks in the New York market last week was within six points of the highest ever reached, the record week having been in January, 1906. The passage of the tariff bill resulted in a brief set-back, which was followed by a rapid advance to new high levels. The market was active throughout the week.

On Monday sales reached nearly a million shares. Railroad equipment and steel stocks were notably strong. The money market was weak. Tuesday, United States Steel advanced to the highest prices ever quoted up to that time. Another million in gold was engaged for export to Argentina. Wednesday, stocks were less active, and there was a slight reaction. Grain was still weak and iron strong. Thursday, the tariff bill was signed by President Taft. After a brief advance, traders attempted to raid the market, and stocks closed lower all around. Friday, the temporary reaction came to an end under the leadership of steel common, which advanced to 76⅜. Union Pacific touched 203, a new high record, and other stocks reached the highest points of the year. Saturday, over half a million shares changed hands in two hours. Steel common and Union Pacific again advanced to new high records, and in the Pittsburg market, Harbison-Walker, preferred and common, made new high records.

Money on call was 1¾ per cent, and the market was easy during the week, notwithstanding a gradual hardening in rates. Time money was firm at 2 to 2½, with moderate business done. Exports of gold were $1,000,000 to Argentina, and imports at New York, $112,298,643. Since Jan. 1, exports of gold have amounted to $74,850,602, against $47,126,357 the corresponding period last year. The wheat market was generally weak, and most of the time buyers were decidedly cautious. The week was marked by the temporary retirement of James A. Patton, who announced that he had sold his last bushel. Bank clearings in the United States for the week showed a decided improvement. Compared with the week before, there was a gain of 16 per cent, and with the corresponding week last year, 25 per cent. Total clearings for the week ending Aug. 7 were $3,180,331,083, against $2,742,035,638 the week before, and $2,543,473 the corresponding week last year. Actual figures for clearing house banks at New York showed surplus decreased $6,725,075; deposits decreased $5,295,700; loans increased $2,688,300, and the ratio of reserve 26.7, compared with 27.2 last week. Trust companies showed loans increased $1,782,200; deposits increased $6,901,700 and the percentage of reserve, 17. Failures for the week were 238, against 227 last week and 262 the corresponding week last year. The failures recorded for the month were fewer than for any month since the 1907 panic, and the liabilities for July were less than any recorded since September, 1906. Shares sold numbered 4,901,249, against 3,659,299 last week, and 4,913,865, the corresponding period last year. Bonds sold, exclusive of government bonds, were valued at $30,378,000, against $22,115,000 last week and $21,691,000 for the corresponding week last year.

THE LEADING INDUSTRIAL SECURITIES.

	Closing Quo. Aug. 7	Changes in week	Date 1909 Ann.	M't'g.	Stock Outstanding	Dividend Basis	Dividend Last Declared	Dividend Date Last Div. Pay.
Allis-Chalmers	16⅜	+ ⅝	Sept.	2	$19,820,000		.....	.....
Allis-Chalmers, pr.	56¾	+1¾			16,150,000	7 cum	1¾ Q.	Feb., 1904
American Can	13	+ ½	Feb.	2	41,233,300		.....	.....
American Can, pr.	84	+ ½			41,233,300	7 cum	1¼ Q.	July, 1909
Am. Car & Foundry	69⅜	+3⅛	June	24	30,000,000		½ Q.	July, 1909
Am. Car & Fdy., pr.	124¾	+4¾			30,000,000	7 n. c.	1¾ Q.	July, 1909
American Loc.	68¼	+3⅛	Oct.	19	25,000,000	5	1¼ Q.	Aug., 1909
American Loc. pr.	121	+1			25,000,000	7 cum	1¾ Q.	July, 1909
American Ship	67	+ ¼	Oct.	13	7,600,000	4	1 Q.	Sept., 1909
American Ship, pr.	106½	— ½			7,900,000	7 cum	1¾ Q.	Oct., 1908
Am. Steel Foundries (new)	63¼	+8	Dec.	2	17,184,000		.....	.....
Barney & Smith	35	.....	June	1	2,000,000	4	1 Q.	Sept., 1907
Barney & Smith, pr.	85	.....			2,500,000	8 cum	2 Q.	June, 1908
Bethlehem Steel	33½	+2	April	6	14,862,000		.....	.....
Bethlehem Steel, pr.	65	+3			14,908,000	7 n. c.	¾ Q.	Feb., 1907
Cambria Steel	46	+2⅞	March	16	45,000,000*	3	1½ S. A.	Feb., 1909
Cambria Iron	46½	+1			8,468,000*	4	2 S. A.	Sept., 1908
Chicago Pneumatic Tool	24½	+1½	Feb.	15	6,145,800	4	1 Q.	Oct., 1907
Colorado Fuel	46¾	— ¾	Oct.	18	34,235,500		3½	April, 1902
Crucible Steel	137⅛	+ ⅜	Oct.	20	24,578,400		.....	.....
Crucible Steel, pr.	81	— ½			24,436,000	7 cum	1 Q.	Mar., 1909
Empire Steel	10	.....	April	27	1,254,770		.....	.....
Empire Steel, pr.	65	.....			2,500,000	6 cum	3 S. A.	July, 1909
Fay & Egan	90	.....	Feb.	18	1,000,000	7	1¾ Q.	Nov., 1908
Fay & Egan, pr.	110	—15			1,000,000	7 cum	1½ Q.	May, 1909
General Electric	172¼	+2¼	May	11	65,178,800	8	2 Q.	July, 1909
Harbison-Walker	25	+4½	Jan.	18	18,000,000		½	Oct., 1907
Harbison-Walker, pr.	91	+4			9,600,000	6 cum	1½ Q.	April, 1909
International Pump	40⅞	+1⅜	June	8	17,762,500		1	April, 1905
International Pump, pr.	87¾	+ ¾			11,350,000	6 cum	1½ Q.	Aug., 1909
Lackawanna Steel	48	.....	March	10	34,971,400		.....	.....
Lake Sup. Corp.	26⅛	— ⅜	Oct.	6	40,000,000		.....	.....
New York Air Brake	97	+5½	June	17	8,012,500	8	2 Q.	Oct., 1907
Niles-Bement-Pond	100	.....	Feb.	3	8,500,000	3	1½ Q.	June, 1909
Niles-Bement-Pond, pr.	100	.....			2,000,000	6 cum	1½ Q.	May, 1909
Otis Elevator Co.	59	.....	March	15	6,375,300		1½ S. A.	April, 1909
Otis Elevator Co., pr.	100	+1			6,295,000	3 n. c.	1½ Q.	July, 1909
Pa. Steel	68	.....	May	10	10,750,000		.....	.....
Pa. Steel pr.	116½	+ ½			16,500,000	7 n. c.	3½ S. A.	May, 1909
Pittsburg Coal Co.	16⅝	+3	March	9	28,104,600		.....	Nov., 1906
Pittsburg Coal Co., pr.	56	+5			27,071,800	7 c.	1¾	April, 1905
Pressed Steel Car	54½	+5⅝	Feb.	17	12,500,000		3	Aug., 1904
Pressed Steel Car, pr.	110	+3			12,500,000	7 n. c.	1¾ Q.	Aug., 1909
Pullman	197	+8	Nov.	10	100,000,000	8	2 Q.	Aug., 1909
Railway Stl. Spring	53⅝	+5⅛	March	4	13,500,000	2	1 S. A.	Oct., 1908
Railway Stl. Spring pr.	108½	+2½			13,500,000	7 cum	1¾ Q.	July, 1909
Rep. Iron & Steel	39⅛	+1⅝	Oct.	20	27,191,000		.....	.....
Rep. Iron & Steel, pr.	108	+1¾			20,416,900	7 cum	2 Q.†	Aug., 1909
Sloss-Sheffield	87⅛	+1½	March	10	10,000,000	5	1¼ Q.	June, 1909
Sloss-Sheffield, pr.	118	+1			6,700,000	7 n. c.	1¾ Q.	July, 1909
U. S. Pipe & Fdy.	34½	+1⅞	June	23	12,500,000	2	½ Q.	Dec., 1907
U. S. Pipe & Fdy. pr.	84¼	+ ¼			12,500,000	7 n. c.	1¾ Q.	Sept., 1908
U. S. Steel	77¼	+3¼	April	19	508,302,500	3 n. c.	¾ Q.	Sept., 1909
U. S. Steel, pr.	127⅜	— ¾			360,281,100	7 cum	1¾ Q.	Aug., 1909
U. S. Steel, 5s	114⅝	— ⅛			463,798,000	5	5 A.	.....
Va. Iron, Coal & Coke	67	+ ¼	Sept.	21	9,073,680		.....	.....
Westinghouse Elec.	89⅜	+3⅝	June	16	27,173,200	10	2½ Q.	April, 1909
Westinghouse Air Brake	118	.....	Oct.	5	14,000,000*		2½ Q.	Oct., 1907

Par value of shares, $100, except those starred (*), $50.
†¼ ex. and 6¾ to apply on deferred dividends.

Copper Stocks.

New York.—Amalgamated Copper closed 86⅛, a gain of 1¼.

Boston.—Butte Coalition closed 25½, a decrease of ½; Calumet & Arizona closed 106, a decrease of ½; Calumet & Hecla closed 680, a gain of 15; Quincy Mining closed 91, an increase of 1; North Butte Mining closed 57½, a decrease of 1¼.

Financial Notes.

The Niles-Bement-Pond Co. will pay a dividend of 1½ per cent on the preferred stock Aug. 16, and another of 1½ on the common stock Sept. 20, Preferred stock books closed Aug. 7 to re-open Aug. 17, and the common stock books closed Sept. 11 to re-open Sept. 21.

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January	5,506
February	5,346
March	5,396
April	5,508
May	5,533
June	5,551
July	5,572

August 12, 1909.

ATTITUDE OF THE IRON TRADE DURING REVISION OF THE TARIFF.

The consideration of a tariff bill is always accompanied by some disturbance of business interests, and the return of prosperity has undoubtedly been retarded by the many months of debate since the Payne bill was introduced. During the last few months, however, business men seemed to show little concern as to the ultimate result of the deliberations, because it was pretty well known how most of the schedules would be adjusted. There is, nevertheless, reason for congratulation that the bill has at last been passed and signed by the president. There will, of course, be much unfavorable criticism, and the minority party will make as much capital as it can of the alleged errors of omission and commission made by the majority party. But whatever may be the difference of opinion as to details, there is no reason for believing that the new law will present any serious obstacles to the increase of prosperity, which is already pretty well established.

Looking back over the period antedating by several months March 15, the day of the convening of congress—because a large part of the important work was done before congress assembled—the iron trade has abundant reason for congratulating itself upon the attitude of those leaders in active business life who were influential in molding the new legislation. In the iron trade, as well as in other industries, there are wide differences of opinion concerning the tariff. Although a very large majority of the manufacturers of iron and steel products are firm believers in protection, some adhere much more vigorously to high protection ideas than do others, and it was natural that in the hearings before the ways and means committee some decided differences should have developed. But on one point there was unanimous opinion, and that was that no matter what the manufacturers believed personally as to tariff policy, the Republican party was committed to the policy of downward revision. With the exception of only one or two cases, in which through ignorance or misunderstanding palpable injustice was done some products, and also excepting tool steel, a recently developed product, and fabricated shapes, and the lamentable efforts made by a very few men to obtain excessive duties on some ferro-alloys, the iron interests freely conceded that some reduction ought to be made, and on numerous products it was frankly granted that heavy reductions could be included in the law without serious injury to American industries. This feeling was shown many times, but perhaps never more unequivocally than on July 27 at a hearing granted by President Taft to prominent iron ore producers and pig iron manufacturers, who were urging the importance of placing a duty of 25 cents per ton on iron ore, a reduction of 15 cents from the Dingley law. Joseph G. Butler Jr., Youngstown, O., was the principal speaker, and after giving a number of reasons why, in his opinion, a reasonable duty ought to be imposed on foreign ore, Mr. Butler said:

After the election, the iron and steel people were called before the ways and means committee. We came here, and we recognized that, notwithstanding the talk about there not being any revision downward, that was what the Republican platform meant. A number of us in the room at present, and myself, appeared before the ways and means committee, and we frankly said, "We are with you; we are willing to reduce the tariff." I was appointed to look after iron ore and merchant pig iron. Others were assigned to finished products. Every man, without exception, said, "Gentlemen, we are willing to stand our share of this revision and this reduction." If you will, as you probably have, read parts of the reports of the ways and means committee, you will find us on record there. We want to impress upon you that our part of the business in this revision of the tariff has been singled out because of its prominence. We have been made a target, and there has been a lot of misrepresentation, I fancy. Now I want to tell you that these gentlemen here, whom I represent (and if you will read this list you will see who they are) represent some good people who have been consistent, and we stand right here where we stood from the beginning, willing to take our share.

President Taft, in his reply to the remarks of Mr. Butler and others, admitted that the metal schedules had been reduced to a larger extent than any other schedule of the bill. Hence, it may be freely asserted without fear of contradiction that regardless of what may be declared when the Payne law comes before the bar of public opinion, to be tried on its merits, the iron ore producers and iron and steel manufacturers can not be charged with having taken any position inconsistent with the promises made to the country by the president and his party.

Consideration of the Payne bill was noteworthy for the immense volume of facts and figures freely presented by the manufacturers. Never before in the history of the country have so many secrets been told and so many valuable facts presented as during the present year. This publicity is in keeping with the most progressive ideas concerning the accountability of great corporations to the people, and to the everlasting credit of the iron trade be it said that its members have been leaders in the new movement.

Many men appeared before the president and the congressional committees, but no one did such untiring work as Joseph G. Butler Jr., of Youngstown, O. Others were of great assistance at times in making a fair presentation of matters affecting the tremendous interests involved, but Mr. Butler was on continuous duty. The documents which he prepared and filed with the house and senate committees are of great value, and will be kept for reference for many years. In this work of representing the iron trade in tariff matters, the mantle of the honored and beloved Swank, who is now devoting his energy more exclusively to the affairs of the American Iron and Steel Association, has fallen on the shoulders of Joseph G. Butler. All honor to him!

OUR INCREASING EXPORTS.

In our last issue, our regular monthly resume of the iron and steel import and export movement gave the totals for the fiscal year just ended and compared the recent movement in detail. On account of the general falling off in international trade, our exports suffered a decline which was practically contemporaneous with the decline in domestic demand. The sharpest decrease was from October, 1907, to January, 1908, amounting in the three months to no less than 40 per cent. The increase since the early part of 1908 paralleled with more or less closeness the increase in domestic tonnage. There was only a slight gain in the second half of 1908 over the first half, while there was a large gain in the succeeding half, just ended. The first half of 1908 showed exports of 480,000 gross tons of scrap, pig iron, rolled iron and steel, wire, nails, pipes and tubes, etc., the second half, 485,000 tons, and the first half of this year 575,000 tons.

The total value of all iron and steel exports in the fiscal year just ended, including hardware, cutlery, stoves and ranges, machinery, etc., but not agricultural machinery, was $144,951,357, compared with $183,982,182 in 1908, the banner fiscal year in this respect. Only 15 years ago, in 1894, our iron and steel exports were inconsequential, amounting to less than $30,000,000 in value, covering iron and steel, machinery, etc. By 1900 the total had passed $120,000,000, thus quadrupling in six years, while the increase since 1900 has been moderate, but of a healthy character, promising further growth.

AN AMUSED AMERICAN ABROAD.

Referring to the articles in recent issues of THE IRON TRADE REVIEW on locomotive building methods in Europe and America, and to the editorial comment thereon in our issue of July 15, an American citizen who has long resided in Germany writes from Dresden, quoting the last lines of the editorial, which are as follows: "While full credit is given American builders for rapid execution and time-saving methods, the value of the more accurate results obtained by European practice in some particulars is not lost sight of." Our correspondent then says:

It is to laugh. Anyone who has had anything to do with the English companies ordering engines for India and Assam, a few years ago, can tell a very different story. Eighty-eight cylinders cast wrong for 44 engines; 600 bolts that would not fit nuts; safety valve springs wrong length; stuffing boxes wrong bore; finally, they would not turn over because the frame transoms were not cut out sufficiently; 10 engines taken out of a shop and found wrong and sent back. Give us something real.

The foregoing does not in any way weaken either the articles themselves or our comments thereon. They were given space not because of their particular application to locomotive work, but as pointing out the radical differences in shop methods. Our correspondent apparently refers to English-built locomotives, while the articles quoted particularized the superiority of workmanship on French locomotives. In fact, they did not include English works at all.

THE IRON TRADE REVIEW does not care to become involved in any international argument on the subject of locomotive building. Many will remember the accrimonious stage which a similar controversy reached some years since, and besides, it is out of our province.

LARGE PRODUCTION OF THE FRICK COMPANY.

The present blast furnace activity of the United States Steel Corporation, which is now about 92 per cent of maximum capacity, is reflected in the large tonnage of coke that is now being manufactured in the Connellsville regions by the H. C. Frick Coke Co. from which most of the stacks draw their supplies. During the week ending July 31, the Frick company was drawing coke from 14,610 out of a total of 16,758 ovens in the Lower Connellsville field and from 2,929 out of 3,004 ovens in the Upper Connellsville district, making a grand total of 17,539 ovens active out of a capacity of 19,762 ovens in the entire region or about 90 per cent. According to the Connellsville *Courier*, the number of ovens of all interests running in the Connellsville region for the week ending July 31 was 30,372. This active capacity manufactured 387,817 tons of coke of which 273,315 tons was made by consumers for their own use and 112,502 was intended for the market. The coke shipments of the Pennsylvania Railroad Co. on its lines east of Pittsburg and Erie for the week ending July 31 were 220,129 tons compared with 130,577 tons the corresponding week in 1907. The coke movement on this line, originating at the points given, was 5,867,774 tons during the year ending July 31 against 3,930,328 tons in the year closing Aug. 1, 1908.

Will Still Make Iron.—John A. Topping, chairman of the Republic Iron & Steel Co., states that the report that the Republic Iron & Steel Co. contemplated discontinuing the manufacture of bar iron is true in part only, and that there is no intention of giving up iron making at Chicago, St. Louis, Toledo, Massillon or Alabama. In the Youngstown district, however, in the wrecking of the Brown-Bonnell puddle mills and improving the rolling mill equipment at that plant, the company had in mind the abandoning of the manufacture of bar iron ultimately, at Youngstown. With additional steel production, increased pig iron capacity will be required in the north. The production of southern foundry iron will be continued and increased to meet trade demands.

The Tennessee Coal, Iron & Railroad Co. placed three additional stacks in operation in July: No. 1 Ensley on the 12th, No. 3 on the 22d and No. 2 Alice on the 27th. No. 3 Bessemer blew out July 14 for relining.

FOREIGN COMPETITION

MAY BE MORE KEENLY FELT UNDER NEW TARIFF.

Explanation of the Increase in Fabricated Structural Steel — Drawback Plan May be Amended Next Winter.

Washington, D. C., Aug. 9.—The passage of the tariff bill by congress is greeted with general satisfaction by the senators and representatives from the states in which the metal trades constitute the chief industry. At the same time, there is more or less misgiving among these members as to how the new law will work out in its operation upon the iron and steel trade. There are two kinds of complaints, namely: Objection to the low rates of duty upon certain grades of materials, especially iron ore, and the abnormal increases in rates upon other grades of material which enter into the industry, and which are expected to result in some detriment to the manufacture of finished products.

So far as the iron and steel schedule is concerned, those who are thoroughly familiar with the changes made in the duties regard that schedule, at least, as fully carrying out the idea of a revision of the tariff downward. In the opinion of Representative Dalzell of Pittsburg, who is a member of the ways and means committee, and who also served upon the conference between the two houses, "The metal schedule," he said, "has been cut to the bone by the new tariff." Notwithstanding the radical reductions, Mr. Dalzell added:

Foreign Competition.

"I do not think the iron and steel industry will be affected seriously, but it will be subjected to closer competition from foreign manufacturers."

The things of which Mr. Dalzell speaks, in the details of the metal schedule, in common with other reductions throughout the tariff bill, have filled the representatives of some industries with more or less alarm over the expectation of dangerous foreign competition. In other words, the fear is expressed that the rates have been cut so low in spots that in periods of depression in foreign industries, with over-supplies of manufactured commodities, there will be a disposition on the part of the foreign producers, to take advantage of the comparatively low rates carried in the new tariff, to dump surpluses upon the markets of this country. The ease with which this may be done will be recognized when it is taken into consideration that duties ranging from 5 to 20 per cent, with a general average on many lines of manufactures, especially in the metal trade, at about 10 per cent, afford easy access to foreign supplies under certain circumstances.

Many New Industries.

Attention is called to the fact that during the life of the Dingley tariff, which is now superseded, covering a period of 12 years, many small factories have sprung up throughout the country, as a result of the increasing use of steel in building and bridge construction, which has made a business of punching, fitting, and otherwise fabricating steel beams and girders for contractors. This situation is offered as an explanation for the advance in the rates under the new tariff for completely finished and assembled structural steel.

In commending this increase, which carried the rate up to 45 per cent ad valorem, a member of the conference committee said, after speaking of the development of the small industries throughout the country during recent years: "I have a list of these plants, and I think they number more than 350, located in every section of the country. They employ many men, and it is to protect these men in a comparatively new line of employment that the rate on finished and assembled structural steel has been advanced. Structural steel now sells abroad for about $26 a ton f. o. b. at port of export. In this country, the price is nearer $40 a ton. Even with the 45 per cent duty, the foreigner can pay the freight and lay his product down in New York cheaper than the American manufacturer can sell it, while in the Pacific coast market the foreigner will have a still greater advantage, due to the high freight rates in the overland transportation."

The Drawback Section.

The disposition of the drawback section of the new tariff has proved very unsatisfactory to exporting manufacturers. One reason given for the attitude of the senate towards the liberalized drawback section as put into the bill by the house, is the fact that greater liberality has been shown in the final draft of the tariff in reducing the cost of imported raw materials by sharp reductions in duties. This is notably so with respect to iron ore and hides, the bases of the metal and leather trades. It is coming to be realized, however, by advanced protectionists that in order to encourage manufacturing for the export market, if duties are to be retained upon materials of any kind entering into domestic manufacture, and even in many instances where the duties are greatly reduced below what has been found in tariffs of recent years, it becomes absolutely necessary that all payments of duty upon such imported materials shall be remitted to the manufacturer who sells his finished product in competition with foreign producers in foreign markets. In the light of this situation, it is expected that early in the December session there will be inaugurated an active campaign in the interests of a more liberal drawback section, as a separate proposition, uncomplicated by the controversies which inevitably attend the consideration of a general tariff bill.

With the exception of the concessions made in the new drawback sections of the tariff covering repayment of taxes paid upon articles subjected to internal revenue taxes, and allowance of the retention of by-products in connection with the manufacture in bond for the export trade, practically no change was made in the drawback section as it has stood in the Dingley tariff.

Ultra-Protectionists Dissatisfied.

Broadly speaking, the ultra-protectionists are dissatisfied with the new tariff. They assert that with the few exceptions such as are in connection with structural steel and high speed steel, absolutely no encouragement is given to the development of new industries by this tariff. At the same time, it must be admitted that the friends and supporters of the tariff bill, especially those who were urgently demanding sharper reductions in duties than have been secured, do not claim for this tariff special value in the direction of developing new industries. The aim of these advocates of tariff revision has been to reduce duties upon the claim that the rates have been inordinately high, and that manufacturing has been overstimulated during the past five or six years, at least, in the life of the Dingley tariff. ARTHUR J. DODGE.

The Merrill Iron Works, Merrill, Wis., which suffered heavily from fire, the second this year, on July 28, will rebuild the plant at once. The machine tools were damaged by water and it will take some time to get them into shape. The casting room suffered most of all.

AMONG MACHINERY MAKERS.

NEW YORK.

Important Additions to Bethlehem Plant—Lathes Selling More Freely.

Office of THE IRON TRADE REVIEW,
Room 1005, No. 90 West St., Aug. 10.

Evidences of the improvement in the machine tool trade continue to accumulate. While the past week has not brought out any extremely large orders, there has been a steady run of smaller business and the aggregate has been a good figure. A particularly strong demand is noted for milling machines, the principal makers of which are now sold up for the remainder of the year, and the extent to which the automobile manufacturing industry is looking after its future requirements is indicated by the recent circulation of a large bona fide inquiry for universal joints for 1911 delivery. Lathes are also selling much more briskly. Several lines are noteworthy because of the large current inquiry and the rapidity with which this inquiry is being increased; a typical example is found in the industrial car trade, where figures are now out on an extremely large number, a considerable part being for export. There is a better sprinkling of small car orders, but the larger are slow in closing; prices continue low and some business has been taken recently at figures which will hardly cover cost.

The tendency of independent steel works in all sections of the country to add materially to their capacity has again been illustrated during the week in the announcement by Charles M. Schwab of uncompleted plans for additions to the Bethlehem Steel Co. plant at South Bethlehem. Ten open-hearth furnaces will be added to the Saucon plant and a mill for rolling small structural shapes is to be installed to release the present rolling capacity for larger sizes. Two blast furnaces will also be added, which with other improvements will cost in the neighborhood of $5,000,000. One or two other plants in eastern Pennsylvania also contemplate important additions to their present capacity.

The Mesta Machine Co. reports heavy bookings in engines, condensers, air compressors and steel mill equipment. Recent orders include seven large rope drives, inquiries for which were originally put out a considerable time ago. Heavy additions to the working force at the Pittsburg works have been made of late and a night shift has been put on.

Since the adoption by the Isthmian canal commission of the plan of buying its supplies for the year at one time, there has been little purchasing from this source during the last two months. Bids have been received, however, on a hydraulic mining and dredging plant for excavation work at the Miraflores locks, where about 8,000,000 yards will be removed from the canal prism in this manner. The Lidgerwood installation of cableways at the Gatun lock work has been completed and has demonstrated a handling capacity well in excess of specifications.

The New York Engine Co., 165 Broadway, New York City, which recently began the manufacture of suction gas engines at Watertown, N. Y., will probably make important additions to the equipment of its works within the next few months. The plant has a capacity of 500 engines per year.

The Cutler-Hammer Mfg. Co., which has a manufacturing plant at 79 East 130th street, New York City, will shortly begin the construction of a five-story steel and concrete building, 86 x 158 feet, at the corner of 144th street and the boulevard, to which the manufacturing business of this section will be removed. For the present the equipment of the old plant will be sufficient and no additional purchasing will be done.

The barge canal contract for canalizing the Mohawk river between Yost and Rexford Flats, a distance of 36 miles, has been awarded to the American Pipe & Construction Co., Philadelphia, at its bid of $2,661,040. Scott Bros., Baldwinsville, N. Y., were low bidders on a lock at Phoenix, their figure being $166,735.

PITTSBURG.

Some Important Business Done and More is Pending.

Office of THE IRON TRADE REVIEW,
510 Park Building, Aug. 10.

The shops of the principal makers of machinery in this district are now well filled with work and some of them are operating double turn. A surprising amount of business in rolling mill and heavy works equipment has been placed in the past several months or since the revival of activity in the iron and steel industry. This has been well distributed but in some cases where large shop capacities were taken into account, some attractive prices for buyers have been named.

The announcement made last week of the new steel works to be erected near Butler, Pa., by the Standard Steel Car Co. has attracted much attention in machinery circles since this is the largest project now pending in this district. Crane makers are particularly interested because seven or eight machines will be required for the open-hearth department and slabbing mill. None of the contracts for the equipment for the works have yet been let, with the exception of a large reversing mill engine.

The active mill construction in this district has provided a call for heavy duty engines and many of such contracts have been placed, but there are still before makers several specifications on desirable orders. The large inquiry for 35 to 40 cranes, for the American Locomotive Co. for several of its shops, is still before the trade and will be placed soon.

The Sharon Steel Hoop Co., Sharon, Pa., has increased its capital stock from $1,000,000 to $2,500,000 and a considerable portion of the additional funds will be devoted to plant improvements. Just what these extensions will consist of has not yet been finally determined. In connection with the increase of capital, the board of directors has been enlarged from five to seven members and Charles Bachman and E. Thacher have been chosen to these capacities.

The Greensburg Foundry & Machine Co., Greensburg, Pa., has been awarding contracts for a new plant. Thomas Donahue is president and W. W. Truxal, general manager of the company.

The Spencer Wire Co., Worcester, Mass., has just contracted to duplicate its present installation of a Westinghouse, 16-inch by 18-inch, vertical gas engine, rated at 200-horsepower, and a 250-horsepower Westinghouse suction producer plant, to meet the power needs of its factory. The engine will be direct-connected to a 135-kilowatt, three-phase, 440-volt, 60-cycle alternator, similar to that now running.

Considerable business in heavy duty engines for mill operations has recently been placed in this district and other important contracts are pending. Among the notable installations awarded have been those for the South Side works and the Aliquippa works of the Jones & Laughlin Steel Co., the new steel works of the Standard Steel

Car Co., at Butler, Pa., for the extensions of the McKeesport Tin Plate Co. with works at Port Vue, Pa., for the additions to the plant of the Inland Steel Co., and others. One of the latest orders to be placed is that with the Wm. Tod Co., Youngstown, by the Jones & Laughlin Steel Co., for a vertical steam engine to drive its new billet mill at its South Side plant. The Jones & Laughlin Steel Co. also has specifications out for two large heavy-duty Corliss engines to drive its sheet bar and billet mills at its new Aliquippa plant. Each engine will have a capacity of about 2,000 horsepower.

The Wheeling Mold & Foundry Co., Wheeling, W. Va., has been awarded two 75-horsepower induction reversing drives for the tables which it is building for the new billet mill of the Portsmouth Steel Co., Portsmouth, O.

Additional contracts are being placed by the Isabella-Connellsville Coke Co. for the construction of its new coke works near Brownsville, Pa. The company recently contracted for the sinking of two shafts upon the property and is contemplating the erection of a large block of ovens.

Another tire mill has recently been placed by the Inter Ocean Steel Co. for its new plant which is under construction at Chicago Heights, Ill. The ladle cranes and charging machines for this works will be supplied by the Morgan Engineering Co. and the remaining cranes have been placed with the Niles-Bement-Pond Co. Julian Kennedy, Pittsburg, is the engineer.

TORONTO.

Atikokan Iron Co. Installs New Equipment.

Toronto, Can., Aug. 6.—The blast furnace of the Atikokan Iron Co., Port Arthur, Ont., which has been idle for nearly two years, was blown in on Aug. 2. The new equipment installed includes a large crane operated by one man, which unloads ore from the cars, taking the place of 40 men who were formerly needed to shovel out the ore. One of the latest-improved coke-drawing plants has also been installed. There is abundance of ore in sight at the Atikokan iron mines to furnish a supply.

Arrangements have been completed for the establishment of a branch of the Tobin Arms Mfg. Co., Norwich, Conn., at Woodstock, Ont. Local men have been interested in the enterprise and a site secured on which a building will be erected at a cost of $10,000. Frank M. Tobin will be general manager of the company to be incorporated under Ontario laws, and the provisional directors will be E. W. Nesbitt, W. J. Taylor, A. J. McIntosh and K. W. Harvey.

The plant of the Dominion Iron & Steel Co., at Sydney, N. S., was visited July 30 by Charles M. Schwab, president of the Bethlehem Steel Corporation, accompanied by E. G. Grace, general manager, F. B. Sheldon and C. A. Buck, general superintendents, and C. E. Lehr, chief engineer. The visitors devoted most of their attention to the rail mill and minutely inspected the raw material used. Mr. Schwab expressed the opinion that, with one or two exceptions, the plant was equal to any in the United States, and in an excellent position to compete in the steel market of the world. The visit has given rise to numerous rumors and speculations as to its object.

D. D. Lewis, superintendent of the rail mill of the Lake Superior Corporation, Sault Ste. Marie, has resigned his position and will remove to Lorain, O.

MILWAUKEE.

Allis-Chalmers Co. Gets Contract for Big Generators.

Milwaukee, Wis., Aug. 10.—John M. Thomas, president of the Thomas Furnace Co., says that the outlook for the iron and steel industries is exceedingly good. Not only has the volume of business increased, he says, but it is already twice as great as two years ago.

"Although a number of plants in this country are closed, they are generally antiquated and their places have been taken by modern, up-to-date plants of much greater production. I should say that the malleable iron business in the vicinity of Milwaukee is about 75 per cent of normal."

Allis-Chalmers Co. has received a contract for two three-phase, 25-cycle, 6,600-volt, alternating current generators, with a combined capacity of 8,000 kilowatt, to be direct-connected to gas engines in the power plant of the Carnegie Steel Co.'s Carrie furnaces at Rankin, Pa. These are the largest machines ever built for service of this kind.

The Fairbanks-Morse Mfg. Co.'s Eclipse works at Beloit, Wis., are working on a large order for pumps for use in the Texas oil fields. The order comes from J. E. Batchelder, western representative.

John Shirley of Chicago, president of the Illinois Steel Solid Forged Car Wheel Co., has been spending some time in Racine and Kenosha, Wis., to interest capital with a view to locating the proposed new plant in either city. The company is a South Dakota corporation with $10,000,000 capital. It is said to have tentative contracts from the Illinois Central and other Harriman railways. The plant is to have a capacity of 300 wheels a day and will employ from 100 to 150 men.

The D. J. Murray Mfg. Co. of Wausau, Wis., a large builder of saw mill machinery, is rushing its new foundry to completion. The boiler, fuel and engine rooms are completed, and the casting room will be ready in about three weeks' time.

The Pioneer Iron Works of Antigo, Wis., has shipped a large order for Morgan gas mixers to Tokio, Japan, and Chihuahua, Mex. The mixer is a device for use in connection with gasoline engines of all kinds, including automobiles. The company held its first annual meeting last week and it was decided to push the manufacture of gas engines, which department of the business has been in the experimental stage since the company's establishment. W. S. Morgan was reelected president; E. F. Horn, vice president; W. A. Maertz, secretary and O. P. Walch, treasurer.

The new gasoline traction engine invented by Robert Russell of Stevens, Minn., and manufactured by the Superior (Wis.) Iron Works, has successfully passed through exhaustive tests at Superior and will now be manufactured.

Charles McCormick Anderson, former assistant United States district attorney at Milwaukee, and now editor and publisher of the *Mexican Mining Journal* of Mexico City, was one of the "home comers" in Milwaukee last week. Mr. Anderson reports that Allis-Chalmers Co., Filer-Stowell Co., Nordberg Mfg. Co., Fred M. Prescott Steam Pump Co. and the Power & Mining Machinery Co., are all doing big business in Mexico mining territory.

CINCINNATI.

Steady Improvement in Machine Tools —Outlook is Br'ght.

Ample evidences of the steady and gradual improvement in the demand for machine tools are furnished by the reports of manufacturers in this center. The heavy types of machines, notably planers, have been somewhat backward in the general improvement noted, but the lighter lines of all descriptions have had a continued call both from dealers

and for shipment direct to the place of installation. One of the large milling machine concerns has advanced prices on several sizes and is behind on orders and running nights. Shapers are selling well. Small lathes are in good demand. There is an order for 12 lathes now pending to go to a maker of crank shafts to be used in automobiles. The automobile factory demand is still a conspicuous feature in the trade and machinery salesmen are constantly traveling the territory where the manufacture of automobiles is specialized. A considerable reduction in stock of machine tools has been affected by the recent pick up in demand, but of course there are still a good many machines of certain sizes still on the shop floors. The wood-working lines just now are not so active as the metal-working machines. There is considerable business in wood-working machinery under consideration, but it seems to be difficult to bring buyers up to the point of placing orders. It is decidedly encouraging to note that in spite of the vacation period being at hand the demand has not slackened and the month of August, so far as can be judged now, is likely to be as good as July, while the outlook for the fall of the year is very good, as many deals have been deferred until after the summer season has passed. The whole tone of the situation is hopeful and there is a disposition to regard the improvement as permanent.

The American Tool Works Co., with its general line of machine tools, has enjoyed a steady and continued improvement in demand and is adding to its working forces as fast as suitable men can be secured. With but few exceptions, the shop is running full in most departments.

The Oesterlein Machine Tool Co. has disposed of all its stock accumulated during the depression, and is running on orders now. The officers of the company regard the outlook as good for the fall.

The Standard Pulley Co. is receiving a continued run of orders and reports the shop full of work with new business developing every day.

The call for heavy engines is rather slow, but builders of engines are operating some departments on outside work. One concern is accepting gear cutting and finds this department busy up to capacity.

The foundries are getting busier right along. As the orders for machine tools increase, the call for castings is naturally greater.

The Frontier Boiler Mfg. Co., Buffalo, N. Y., is in the market for one combination punch and shears, bending rolls, 10 feet long and capacity up to 5/8-inch plate; one 150-foot air compressor; one 5-foot radial drill. The company manufactures and repairs boilers, tanks, stand pipes, blast furnaces, etc., and it intends to build a new plant as soon as a site can be secured.

STEEL RAIL TESTS

Witnessed by Members of Block Signal Board—Will Not Attempt Regulation.

Washington, D. C., Aug. 9.—The reports printed from time to time in the daily press, and which have been accepted as true by some of the metal trades publications, that a decision has been reached by the block signal board of the interstate commerce commission favorable to specific action on the part of the board in determining the character of steel rails to be utilized by railroads, is unsupported by the latest information collected at the commission headquarters here.

The fact is that the block signal board is devoting its attention mainly to the subjects indicated by the title of the board itself. At the same time, the board has attended some tests made of high grade modern steel rails, with a view to ascertaining precisely the results accomplished as shown by these tests. In every instance, however, the attendance of representatives of the board upon these experimental tests has been at the request of manufacturers, and not upon the instructions of the interstate commerce commission, or of congress.

Reports have been made to the board by some of the officials showing results achieved from the utilization of steel rails into the component parts of which titanium and other up-to-date materials have entered, and it is possible that the results of these experiments will be submitted in the form of a report to the commission.

It is declared, however, to be absolutely outside of the province of the block signal board, or of the commission, to enforce regulations of any kind with respect to materials which enter into the operations of railroads in interstate commerce. Congress from time to time calls for reports which necessitate investigations of these subjects, but no such investigation with respect to steel rails has been asked for by congress or the commission.

FRONTIER IRON WORKS.

The new plant of the Frontier Iron Works, Buffalo, began operations July 31, when the first regular heat was cast in the foundry. The plant consists of six buildings. They are located at Letchworth and Grant streets, and the old works at the foot of Auburn avenue will be continued in operation. The foundry is 220 x 90 feet; pattern shop and store house, 125 x 50 feet; machine shop, two stories, 150 x 50 feet; office building, 40 x 30 feet. The foundry has two cupolas, one of 12 tons capacity, the other, 4 tons. The commencement of operation of this plant adds substantially to the iron industry of the Niagara Frontier. Besides doing a general foundry business the company will specialize in making castings for heavy machinery and will continue on a larger scale its manufacture of automobile and marine cylinder castings. All the buildings are fireproof, of steel, concrete and brick construction. Walter F. Semon is president and treasurer; J. W. Semon, vice president, and James W. Murphy, secretary.

Muck Mill Resumes.—The Kittanning Iron & Steel Mfg. Co. resumed operations August 2, in its iron mill, Kittanning, Pa. Twenty-one puddling furnaces are now running. The plant has been idle since about July 1, pending the settlement of the puddling wage scale. The company also owns and operates the Rebecca blast furnace at Kittanning and is now making repairs upon this stack preparatory to blowing it in this fall.

The Halsey Mfg. Co., Lynn, Mass., recently incorporated, advises that it will manufacture automatic temperature regulating devices. Most of the manufacturing will be done by contract, and consists of punch-press work. The company would like to get in communication with a foundry equipped to do the finest light, smooth, casting work in gray iron.

The Crane Co., Chicago, announces the purchase of the supply business and good will of the Knight & Jilson Co., Indianapolis, Ind. The company will continue the business at the old location, and the branch will have for manager C. M. McElwaine.

The main building of the Hayes Run Fire Brick Co.'s plant at Hayes Run, Pa., together with the tool house, carpenter shop and pattern shop, was destroyed by fire July 29. The loss is estimated at $60,000.

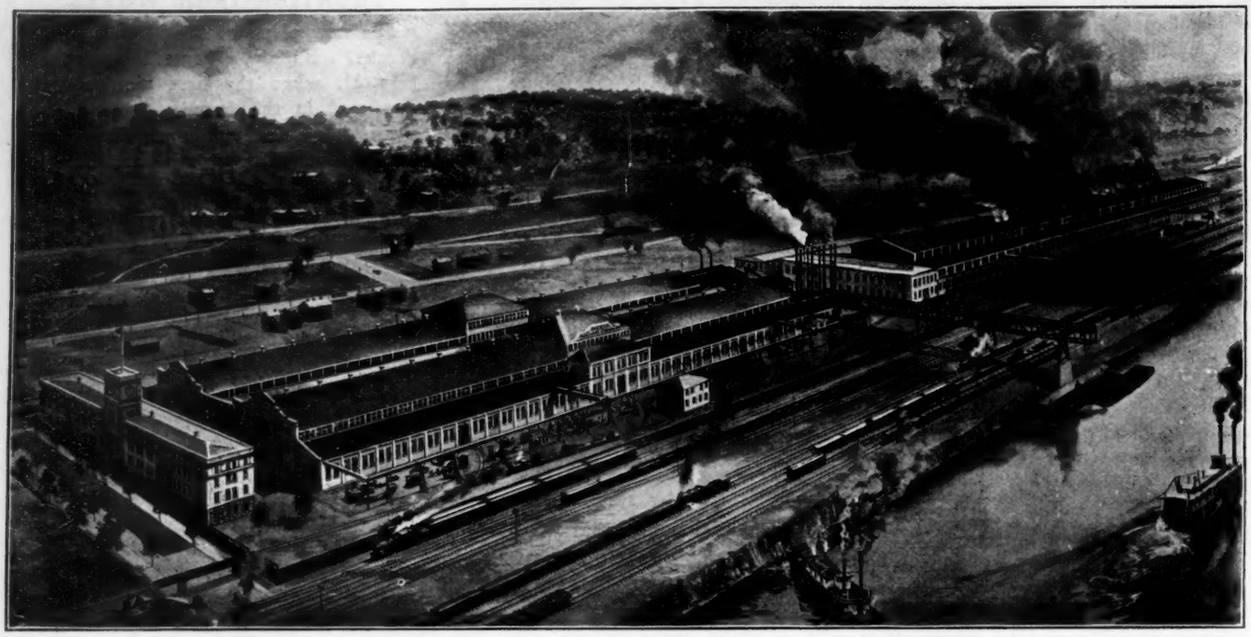


FIG. 1—GENERAL VIEW OF THE WORKS OF THE MESTA MACHINE CO., WEST HOMESTEAD, PA.

IMPROVEMENTS IN THE PLANT OF THE MESTA MACHINE CO.

The plant is located in West Homestead, Pa., about six miles from the business center of Pittsburg, and adjoining Homestead, Pa., which is in the center of the greatest iron and steel manufacturing district in the world.

The shipping facilities are of the best, having connection with the Pennsylvania R. R., Baltimore & Ohio R. R. the Pittsburg & Lake Erie R. R. and with the Monongahela river. The grade line of the plant is 15 feet above high water mark of the latter.

Fig. 1 is a view of the entire plant, which includes about 20 acres of ground and has about 500,000 square feet of floor area under roof, of which over 400,000 square feet is served by electric traveling cranes. To the left of the picture is seen the four-story office buildings where the general books and records are kept in large fire-proof vaults. The group of buildings to the right of the office are used for a machine and erecting shop, and are built of steel, concrete and firebrick; 210 feet in width and 1,000 feet in length, and are fireproof in their construction. The overhead traveling electric cranes in these departments and the machine shop tools, are capable of handling the heaviest pieces of machinery that can be shipped. Adjoining the lower end of the machine and erecting shops is the power plant. The boiler house is connected to the river by an overhead bridge, by means of which coal is conveyed from the river to the boilers. This bridge can also be used in making shipments of machinery by river when necessary. On the river side of the machine shop, will be noticed a yard covered by two electric traveling cranes running the entire length of the shop. This yard is used for storing castings as they come from the foundry until the machine shop is ready to receive them. Directly back of the power house is a large forge shop.

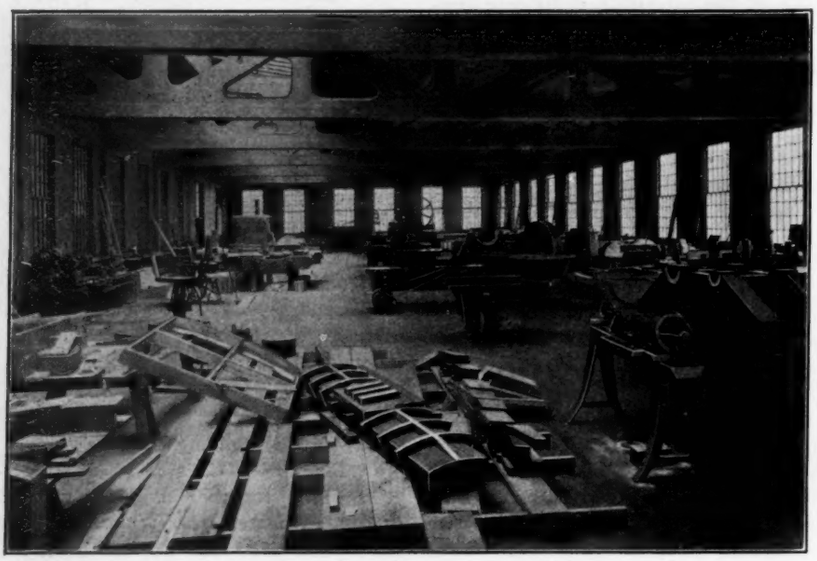


FIG. 3—UPPER FLOOR OF PATTERN SHOP.

It is to the group of buildings extending from the power house to the extreme right of the illustration we will for the present confine ourselves, as they are the most recent additions to the plant and contain features of decided interest, and we have prepared a rough ground plan (Fig. 2) showing their general arrangement.

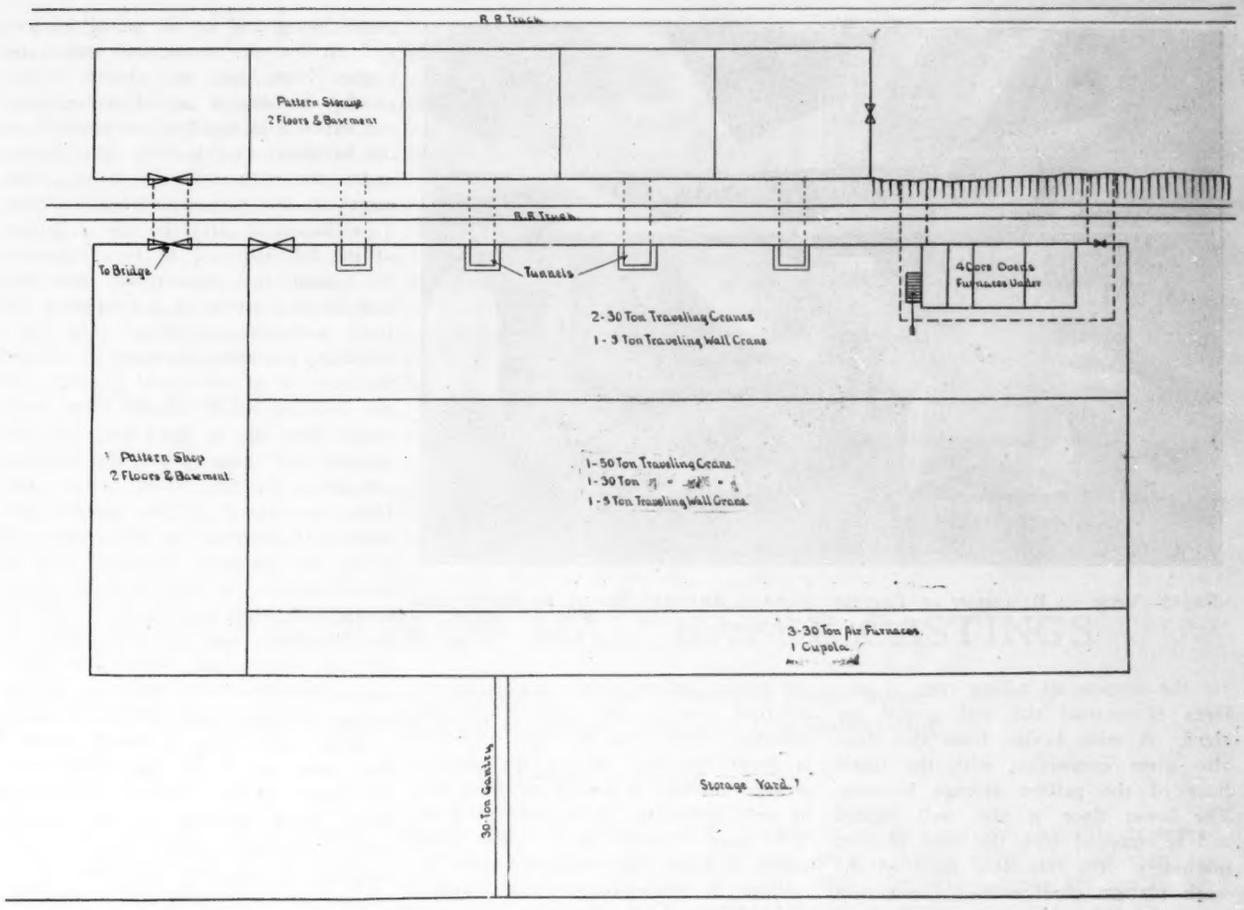


FIG. 2—GROUND PLAN OF FOUNDRY AND PATTERN STORAGE.

Pattern Shop.

The pattern shop, 60 x 165 feet, two stories and basement, extends all across the end of the foundry proper, which is in three bays, 60 feet, 80 feet and 25 feet wide, respectively. The foundry building is being constructed 1,000 feet in length, of which 300 is now under roof and in service and the remainder is being pushed to completion. The grading and foundation work is completed and erection will follow as rapidly as possible. The pattern storage building is also being extended symmetrically with the foundry.

The pattern shop is interesting and attracts attention, first because of its appearance of permanency. It has been built as nearly fireproof as engineering skill can design. Heavy steel construction has been imbedded in solid concrete, forming a building practically indestructible. The roof is of reinforced concrete construction, as seen in Fig. 3, which shows the top floor where large engine bed plates and similar patterns are made. The value of abundant light has been kept in view and in addition to the continuous row of large windows around three sides of this room a large skylight extends the entire length of the building. It is very important in building large patterns to have overhead light in addition to the side light, and although on the second floor the largest pattern can be handled with ease to and from the foundry by overhead traveling electric cranes. The large door seen at the left of this view opens to a spacious gallery platform from and to which the foundry cranes handle the patterns. The equipment of machinery and tools is new throughout, of the latest designs and modern in every respect. Many special tools have been installed

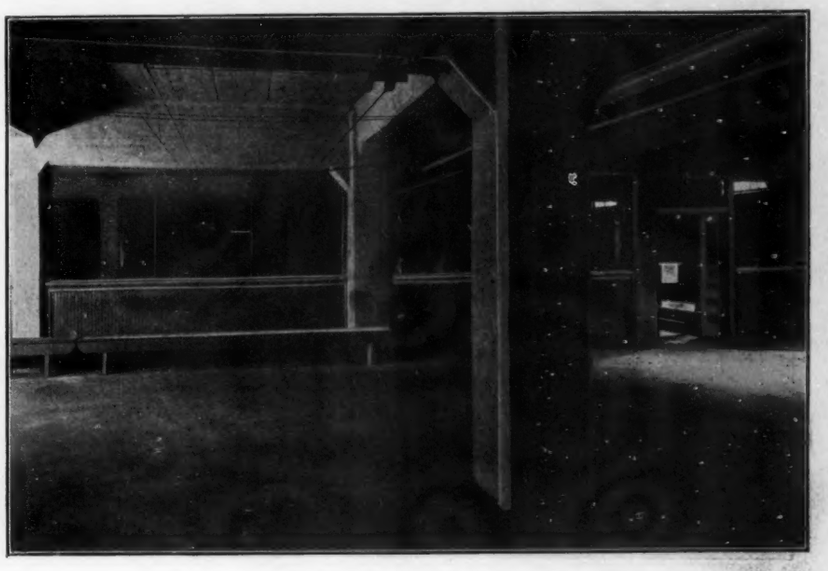


FIG. 4—BASEMENT OF PATTERN SHOP.

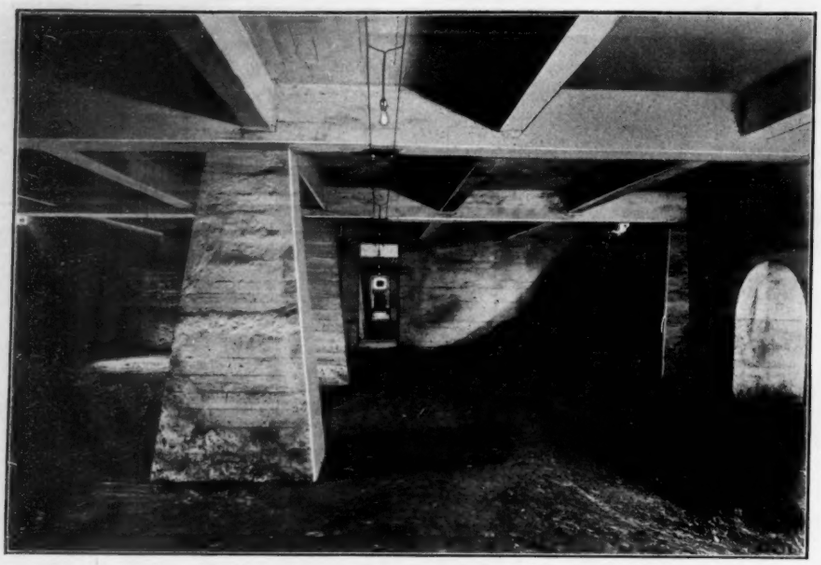


FIG. 5—VIEW IN BASEMENT OF PATTERN STORAGE, SHOWING ROOMS IN SERIES AND TUNNEL TO FOUNDRY.

for the purpose of taking care of patterns of unusual size and special designs. A wide bridge from this floor also gives connection with the upper floor of the pattern storage building. The lower floor is also well lighted and is equipped with the most modern machinery. On this floor most of the work for the gear molding department is made. The offices of the foreman and the clerical force required, are also of concrete, thus assuring absolute safety of all records, prints and designs from fire.

The Basement Feature.

We come now to one of the features which so far as we have learned are unique. A 14-foot basement underlies the entire pattern shop, with solid reinforced concrete side walls, floors and columns. Referring to Fig. 4, which is from the end nearest the pattern storage building, a screen partition will be seen extending across the basement. The space beyond this screen and which is nearly the entire basement, is devoted to merchandise and supplies storage under the care of a storekeeper. These include all supplies in quantity, and which are issued either direct or to the smaller tool and store rooms throughout the works, spare parts, etc. The height of basement floors above the river gives perfect drainage and there is no evidence of the slightest dampness. A large tunnel leads from this basement to the power house, and in this tunnel are carried all the air, steam, gas and water service lines, and the electric cables, so that nothing is buried underground nor exposed to weather overhead. From the basement also leads a wide tunnel under the railroad tracks to the basement of the pattern storage building. This basement also is the full size of the building and 14 feet high, and is divided into rooms 60 feet long and the full width of the building (50 feet), with doors between. The entire building, including basement floor and the roof, is of reinforced concrete and the dividing walls extend from basement floor up to the roof. At the ground and upper floors the openings are closed by fire doors. Heavy patterns are stored on the ground floor and shelf patterns on the upper. It is in the basement, however, that interest centers. It will be observed that a railroad track serves each side of the building, and directly from the cars on either track, sands, loam, charcoal, clay, fire brick, etc., can be unloaded into any room of the basement.

From each room a tunnel about 8 feet wide and 8 feet high leads under the track to the foundry, terminating in a shaft opening to the foundry floor. Wheeled truck boxes convey supplies to the foot of these shafts, whence they are easily and quickly lifted and transported by the overhead cranes to any point on the floor.

Fig. 5 shows a view in this basement looking through the rooms in series, while to the right will be seen one of the tunnels leading to the foundry. The whole series of rooms is well lighted and ventilated and are apparently perfectly dry.

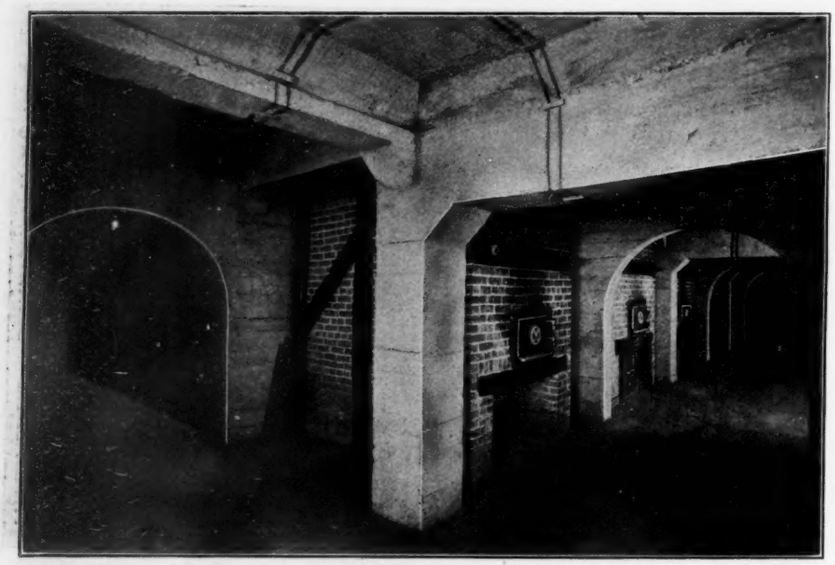


FIG. 6—CORE OVEN FURNACE ROOM.

The Advantages of Basement Storage.

The storage of all materials in a dry frost-proof situation will not only appeal to foundrymen, but the elimination of unsightly sheds, with their mussy surroundings, the convenience with which material may be got to the floor without interfering with floor work and without opening doors in winter time or bad weather, the absolute prevention of the waste invariably attendant upon the usual methods, and the utilization of space otherwise lost, combine to make the scheme noteworthy. The arrangement of core oven furnaces is a further development of the same idea. The established grade line is about 14 feet above the level on which the pattern storage building stands, as is indicated by the fill in Fig. 2.

Therefore, the basement idea is extended to include the core oven furnaces and the tunnels leading from the furnace room will open into succeeding

basement rooms in the pattern storage when these are comp'eted.

Fig. 6 shows the furnace fronts, which are only the length of grate from outside wall. The space in front of furnaces is utilized for storing small cores which keeps them warm and dry and in perfect condition. There is thus no firing at floor level and no handling of coke, ashes, etc., where it interferes with other work. Neatness is characteristic of the entire arrangement, an object generally impossible of attainment in the ordinary layout.

The Foundry.

The foundry itself is of steel with reinforced concrete roofs. The 60-foot bay is served by two 30-ton travelers and one 5-ton traveling wall crane with a 20-foot reach. The 80-foot center floor is served by one 50-ton and one 30-ton traveler and one 5-ton wall traveler, also with 20-foot reach, and numerous jib and air cranes are also provided. As the lengthening of the building proceeds additional cranes will be added.

There are three air furnaces and one 84-inch cupola already installed and the size of castings is only limited by transportation facilities. There is melting capacity to pour 250 tons. The 25-foot bay also contains the brass foundry which is equipped with both crucible furnaces and converter.

Between the foundry building and the railroad tracks which border the river is a storage and flask yard served by an 85-foot span, single legged gantry of 30 tons capacity, and a second crane for this yard is in process of construction. The fuel for the air furnaces is dumped from hopper cars on the track alongside the foundry building into a concrete pit from which it is taken by conveyors which distribute to all the furnaces.

The entire trackage and switching and yard crane service is very complete and provides for the utmost dispatch with minimum of labor and disturbance in handling material.

The products of the company include heavy duty engines for rolling mills and power plants, blowing engines and iron and steel making machinery gener'y. Machine molded and cut gears up to the largest sizes are a specialty with the company, who claim that their facilities for this work are not surpassed in the United States.

PRODUCTION OF MALLEABLE CASTINGS

The Use of the Pyrometer in the Annealing Department—The Final Finishing Operation—Wet and Dry Galvanizing.

By Richard Moldenke.

In modern practice it is essential that in conducting an operation advantage be taken of every safeguard that may be available. Hence in every annealing room there should be a good pyrometer to keep track of the oven temperatures. The eye is not reliable enough for this purpose, and is the cause of much trouble in the old-fashioned plants. Probably the only guide the eye has is to note the cracks in the brick-work which, when appearing as white lines on a red back-ground, indicate to the experienced operator that his temperature is about right. As the men detailed for this purpose are apt to get old in service, the eye loses its sensitiveness, and the result is either the under-annealing or over-annealing of the work. There are quite

Malleable Fittings Emptied Out of Annealing Pots

a number of pyrometers on the market but some types become unreliable when long in use. The Siemens pyrometer depends upon a given weight of water at normal temperature to which the zero of the scale is set, and into which a ball of copper, heated to the temperature of the annealing pots, as previously explained, is dropped. The resulting temperature, obtained under suitable precautions, sends the mercury thermometer of the instrument up to a point readily read off on the scale, and gives the temperature of the copper ball. The weight of the water is in fixed proportion to the weight of the ball, and hence this can change to a small extent without affecting results. As the balls scale off perceptibly, new ones of proper weight are substituted, and unless carelessly handled this instrument remains serviceable for a long time and is absolutely reliable. The objection, however, is that it takes some time to get the readings. The copper ball must be held against the pot by an iron rod into the end of which it is inserted. It must remain in the oven about 15 minutes to properly acquire the temperature. Unless the test is conducted quickly and accurately, heat is apt to be lost, and the readings naturally will be low. The advantage is that the instrument is comparatively cheap, unless by carelessness thermometers are broken.

Le Chatelier Pyrometer.

The Le Chatelier pyrometer, on the other hand, depends upon the generation of a feeble current of electricity when metals or alloys of different kinds are joined together, and the junction is heated. This current is directly proportional to the degree of heat, and hence when measured by a suitable galvanometer, becomes very accurate and sensitive. While the Siemens pyrometer gets the true temperature within 25 degrees Fahr., the Le Chatelier comes within 10. The objection is the rather large first cost of a proper instrument, for unless the very best of this class is taken, troubles eventually crop up by reason of parasitic currents which develop in the platinum and platinum-rhodium alloy wires used.

Dumping the Pots.

After the annealing has been completed, the pots are allowed to cool and then withdrawn from the ovens. They are next dumped on the iron floor of the packing space, and the castings picked out of the scale. This is shown clearly in the accompanying illustration. Naturally, some of the scale will adhere to the castings, and hence in some works a preliminary tumbling is given them to free them from this material and at the same time to save it. Usually, however, the castings go directly to the soft rolling room, where they either are placed in a number of the regular style rolling barrels, or else into a long one set on an incline, the uncleaned casting going in on one end, and coming out cleaned at the other.

The very best material to add with the castings in these soft-rolling barrels is the broken pieces of annealed castings, such as test plugs, and defective annealed work not liable to be mistaken for good. This rubs off the scale, and by reason of the contained graphite (temper-carbon is really amorphous graphite and acts like such when used as a polishing medium) imparts to the castings a beautiful, glossy black finish.

Finishing Department.

The castings are now ready to go to the finishing departments. Depending upon the care originally exercised in the various preceding processes, there will be more or less work to be done before the castings can be shipped. Thus, with careless molding, castings will be over-weight, not true to pattern and the like. Careless trimming leaves much expensive work to be done in the grinding room to clean off fins, gates, and other excrescences, spoiling the appearance of the work. Bad packing leaves the castings warped, if not with wasted edges and corners; and so previous sins are all brought home to the detriment of low shop costs when the castings come from the soft-rolling room.

Chipping Department.

We therefore find in every establishment to a greater or smaller extent a chipping room where the rougher work is done in the vise by hammer and chisel; then the grinding room, where the lighter corrections are applied; finally a straightening department where this work is attended to, as well as special jobs are gone over, such as getting pipe rings to true shape, forcing arbors through holes to make them pass the inspector's requirements as per specifications, etc. Here also are bent any castings, to their required shape, which are found advisable to cast straight originally.

The castings now go to the shipping department or warehouse, as the case may be, under ordinary conditions. Oftentimes, however, it is necessary to galvanize or tin the work, and then the castings, after passing all the departments and being pronounced perfect, are subjected to these processes.

Galvanizing.

In the case of galvanizing, where we have to deal with baths that are too high in temperature, it very often happens that the work comes out too hard to thread afterwards. The temper-carbon has gone back again, and a hard casting has resulted. While this may be avoided by changing the composition in various ways, or in other words applying metallurgical tricks, it is not a good policy. If the work were properly made in the first place, the composition correct, the metal not injured by oxidation, and the zinc bath not too high in temperature, the castings will remain soft enough to machine. It is advisable to introduce a second pickle between the first and the galvanizing. Thus, if either sulphuric or hydrofluoric acid is used for the first bath, a second with hydrochloric acid prepares the iron much better for the hot galvanizing than if the first pickle only were used.

Dry Galvanizing.

Probably in no place will the introduction of the Sherardizing process be of so much value as for galvanizing malleable castings. This rolling of the work with zinc dust at temperatures below the melting point of that metal, will give the malleable casting a better chance than is the case at present. Furthermore, the zinc penetrates deeply into the body of the casting, and as such work is never used for important purposes, but rather only where protection from rust in addition to tightness against leaks is required, the probable loss of some of the strength by such penetration of the zinc will not matter materially.

For special classes of work the soft-rolling is carried out so carefully, by using leather scraps, old shoes and the like, that this not only cleans, but polishes the castings so nicely that they can subsequently be tinned, nickeled, and even silver and gold plated, making the finest kind of art work, in which strength is combined with ease and cheapness in the making. Here the art blacksmith is done away with, and one piece is like another.

Wayne stack of the Detroit Furnace Co. was lighted July 29, having been idle since May 17.

THE FORMATION OF SILICON SULPHIDE IN THE DESULPHURIZATION OF IRON.*

By W. Fielding.

The object of the work was to investigate the conditions under which ferro-silicon can react with ferrous sulphide and liberate a sulphide of silicon.

In the refining of steel in the electric furnace a very complete desulphurization of the metal can be effected. This action is in practice found to be considerably facilitated by the addition of a charge of ferro silicon.

Several explanations have been put forward to account for this influence on the removal of sulphur. Some have ascribed it to the high temperature produced during the reduction of the ferrous oxide present by the ferro silicon. Prof. Osann (*Stahl und Eisen,* June 15, 1908, believes that this removal of iron oxide prevents the back-action between it and calcium sulphide; at the same time a higher temperature is produced by the deoxidation which assists the removal of sulphur as calcium sulphide. At the end of his paper he suggests the possibility of the formation of a gaseous compound, silicon sulphide.

Max Haff (*Electrochemical and Metallurgical Industry,* March, 1908, page 96) has previously declared that silicon was produced by heating together sulphides and silicides at a high temperature, but no details were given of his experiments. Silicon sulphides (SiS_2) is described (Hempel and v Haasy) as a solid at ordinary temperatures, which at a red heat sublimes under 60 mm. pressure.

In the present work the reaction between ferro silicon and ferrous sulphide was investigated by heating intimate mixtures of these compounds in a vacuum at known temperatures. The reacting substances were placed in a crucible in the form of a hollow graphite rod, which could be evenly heated by the passage of an electric current. Electrical connection was made with the rod by fitting it in graphite plugs, which in turn were soldered into water-cooled brass tubes to which cables could be attached. (Compare Pring and Hutton, *Trans. Chem. Soc.,* 1906, Vol. 89, page 1593, and H. C. Greenwood, *Trans. Chem. Soc.,* 1908, Vol. 93, page 1485.) The rod was surrounded by a water-jacketed Jena glass tube, for experiments in which the rod was heated below 1,500 degrees Cent.; above this temperature a silica tube was employed. The apparatus was made air-tight by luting the ends of the tube with soft wax. Temperature readings were made by means of the Wanner optical pyrometer in those cases in which a glass tube was employed, and changes in pressures were indicated by a mercury gage connected with the tube.

In experiments in which the commercial variety of iron sulphide was used the mass fused at a temperature of about 930 degrees Cent., and a vigorous reaction set in with rise of temperature. In later experiments, using pure iron sulphide (free from oxide) no reaction was observed up to about 1,300 degrees Cent., hence the reaction noted in the first case was probably due to reduction of oxide of iron present in the iron sulphide by the ferro silicon. This explains the sudden rise of temperature noted.

In all the experiments a yellow sublimate began to appear on the walls of the tube at a temperature of 1,500 degrees Cent. On removing this product and treating with water, a rapid effervescence took place, sulphuretted hydrogen being liberated and silica separating. A larger quantity of this product was prepared by placing a mixture (40 gms.) of ferro silicon and ferrous sulphide in a long graphite tube, which was closed at one end and fitted at the other into a porcelain tube to serve as condenser. The graphite tube was then placed in a horizontal carbon-tube furnace, with the porcelain tube projecting outside, and the temperature was raised in stages.

No sublimate was formed until a temperature of 700 degrees Cent. was reached (the higher temperature required in this case being probably due to the experiment being carried out at atmospheric pressure instead of at reduced pressure as before) when a yellow vapor was evolved, which condensed partly in the tube, the remainder being carried along by the stream of carbon monoxide gas coming off, which on being burned on the end of the tube smelled strongly of sulphur dioxide.

About 4 grams of the product were obtained, which, on analysis, was found to consist of approximately 50 per cent silicon sulphide (assuming the formula to be SiS_2) the remainder being iron sulphide, which had volatilized, silica (obtained from the action of moisture in the air on the silicon sulphide) and a small amount of ferric oxide in a finely divided state. In different experiments products of variable composition were obtained.

The silicon sulphide was estimated by acting on it with water in a Schrotter's apparatus (fitted with a calcium chloride drying tube) and determining the weight of sulphuretted hydrogen evolved. The gas evolved, after being efficiently dried by calcium chloride, was passed into weighed potash bulbs, and the increase of the potash was found to correspond to the lossing weight of the Schrotter's apparatus. The weight of silicon sulphide (SiS_2) corresponding to this weight of sulphuretted hydrogen was then calculated. The product remaining in the apparatus was then treated with dilute sulphuric acid, and the gas evolved driven over into weighed potash bulbs, and the corresponding amount of ferrous sulphide calculated. The estimation of the ferrous sulphide was further confirmed by determining the amount of iron present in the solution, which was found to correspond to the amount of iron sulphide present.

It will be observed that it has not been possible to fix the identity of the sulphide of silicon present in the product. An attempt was made to prepare the silicon in greater purity by distilling the product in vacuo, but up to 1,100 degrees Cent. no volatilization was observed. No attempt was made at higher temperature, as iron sulphide is also volatile above 1,100 degrees Cent. According to Hempel and v. Haasy, silicon sulphide (SiS_2) distills at red heat under 60 mm. pressure; this tends towards the conclusion that it is a much less volatile sulphide of silicon which is here produced.

*Paper read before the Faraday Society on June 15.

UNIQUE BOILER AND STOKER EQUIPMENT.

A single boiler of unusual capacity, 2,274 horsepower, has been placed in the Delray power station of the Detroit Edison Co. This boiler, a Stirling Special, has a 150-inch by 11-foot grate, and is served with bituminous coal by four Roney stokers installed underneath the one boiler. This exceptional installation is in the first section of the Detroit Edison Co.'s No. 2 power house at Delray, and in the construction of the plant allowance has been made for extending the outfit with similar units as the station's lighting load increases.

The directors of the American Rolling Mill Co. have ordered an issue of $300,000 common stock which stockholders may take at par in the proportion of three shares of the new issue for every eight held. The stock sold in Cincinnati recently at 342.

A NEW LUBRICATOR.

We present herewith illustrations of a new form of lubricator, for which exceedingly strong claims are made by the manufacturers, the C. J. Van Doren Co., Chicago. Briefly described, it consists of a small sheet steel barrel or cylinder fitted into an opening in the journal cap and closed by a nickel-plated cap. Within this steel cylinder is a second cylinder of wood, with its lower end fitted to the circumference of the shaft, and called a gland. This gland is maintained in contact with the surface of the revolving shaft by a light spring which is so arranged as to engage with openings on opposite sides of the steel cylinder near the upper end. Lubrication is effected by filing the near cylinder or gland with a solid lubricant or grease. The lower end of the gland being a close fit over the shaft, permits only a very small proportion of the grease to be carried out by the moving surface, and further, it is claimed, it acts as a wiper, taking up surplus grease. The makers claim that bearings equipped four bearings is said to have been $2, and with the Van Doren lubricator less than 2 cents, a reduction of over 99 per cent.

ELECTRIC SMELTING OF IRON ORES IN SWEDEN.

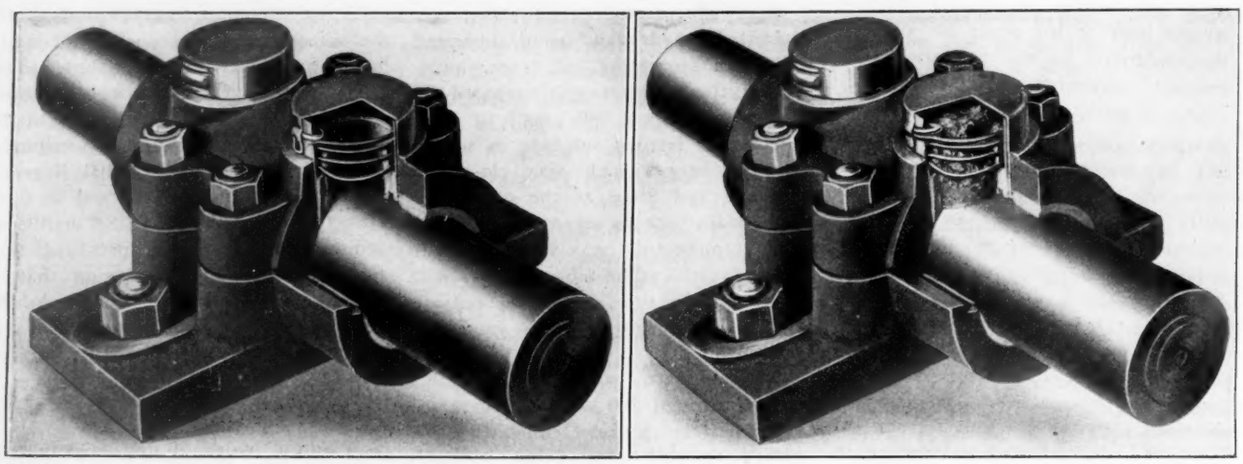
The following information regarding the Trollhattans Elektriska Janverk is from *Electrochemical and Metaluurgical Industry*:

"The company has been incorporated with a minimum capital of 600,000 kr. ($160,000), the inventors having allied themselves with some prominent steel men as promoters of the organization. In this way the common interest of a successful process for the electric smelting of iron ore has caused them to combine for the purpose of obtaining experience in working the process on a commercial scale before entering upon what may be called "large scale operations."

The new works will be situated near Gothenburg at Trollhattan where large water power developments have suitable metallurgical coke can be obtained for 21 kr. ($5.63) per ton. The ore used will be shipped from the mines at Grangesberg, situated about 200 miles form the furnace, part of which distance is covered by water transportation.

The cost of producing one ton of pig iron in kr. (1 kr. = 1 Swedish crown = 26.8 cents) is figured as follows for a production of 15,000 metric tons of pig iron at Trollhattan:

	Kr. per ton ore.	Kr. per ton pig.
1,700 kg. ore (60 deg. F.)	7.00	
Freight to Trollhattan....	4.50	
Unloading at Trollhattan.	0.30	
	11.80	20.00
300 kg. coke (21 kr. per ton)		6.30
100 kg. limestone (6 kr. per ton)		0.60
One-third hp-yr. electric power (27.60 kr. per hp-year).....		9.20
Salaries and wages, including crushing and transports....		3.50
Cost of electrodes, 8 kg., at 0.25 kr.		2.00
Maintenance and general expenses		4.50
Interest and sinking fund (11 per cent on ½ × 365,000)..		2.70
Analyzing costs		0.20
Office and organization		1.00
Royalty		1.00
Total per ton of pig.....		51.00



Sections Through Lubricator and Bearing, Showing Lubricator Both Empty and Filled.

with this system have run almost without interruption for long periods, up to a year in some instances, without even replenishing the supply of grease. It goes without saying that in such a case there can be little or none of the lubricant wasted. In addition to economy in lubricant, the avoidance of drip from bearings is always desirable, not only on account of neatness but also reduction in fire risk. Some very strong claims are made on the score of comparative operating costs on certain bearings as between the use of oil and this lubricator. For example, in one instance the cost of operation is said to have been reduced 97 per cent; in another case the cost of oil for a three weeks' run on

been carried out by the Swedish government. The company has an option on 10,000 horsepower at at price of 37.50 kr. ($10) per kilowatt-year for the first 10 years, and at 50 kr. ($13.40) for the following 10 years. Present plans cover the erection of three furnaces, two of which will be working while the remaining one will be held in reserve. Eeach furnace will have a capacity of 2,500 horsepower, and will produce 7,500 tons of pig iron a year. The intention is to use coke as a reducing agent, because coke in this furnace gives a pig iron having qualities equal to that of the charcoal iron, and coke is cheaper than charcoal, which otherwise is used almost exclusively in Swedish blast furnaces. A

It is, therefore, calculated that the pig iron can be produced at cost of 51 kr. per metric ton, which is equivalent to $13.67 per metric ton, or $12.40 per short ton. It is assumed that the selling price will be at least 58 kr. per metric ton, or $14.10 per short ton. Therefore, with a production of 15,000 tons a year and a capital investment of 600,000 kr. the profits would amount to at least 15 per cent. The cost sheet for the plant is given as folows:

	Kronen.	Dollars.
Three electric furnaces of 2,500 hp, including transformers, etc.	150,000	40,000
Installation	15,000	4,000
Crushing machinery for 35,000 tons of ore and 7,000 tons of coke per year.....	9,000	2,400
Motors, small transformers, lighting, etc.	6,000	1,600

Apparatus for transportation of ore from docks to furnaces, etc.	15,000	4,000
Apparatus for transportation of iron, slag, etc., in plant	12,000	3,200
Furnace building and storehouses	60,000	16,000
Building for crusher plant	4,000	1,060
Grading, fencing, work on docks	15,000	4,000
Office and laboratory	20,000	5,300
Superintendence and unforeseen expenditures	34,000	9,060
Total	340,000	90,620
Licenses	25,000	6,660
Working capital	235,000	62,720
Total	600,000	160,000

Some of the items given above, which are almost identical with those given by Mr. Hulleyard in our last issue, seem to be somewhat optimistic, but it is to be hoped that the comfortable margin of profits calculated will make it profitable for the plant to carry somewhat heavier first cost that has been assumed.

The outcome of this enterprise will be watched with great interest by those acquainted with the development of the electric smelting of iron ore in places where conditions are favorable to such a process. So far the experimental furnace has been running only for a period to be measured by days or weeks, and it remains to be seen whether the design will stand the crucial test of running commercially over long periods. The successful outcome of the enterprise will in many cases have an important bearing upon the iron industry."

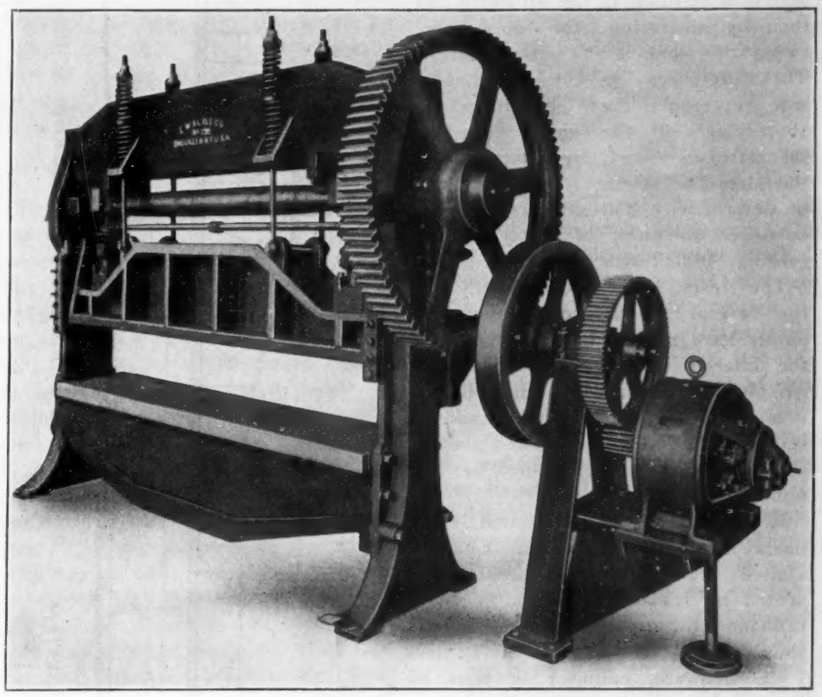
FUEL AND ENERGY PROBLEM OF THE SOUTH.

President R. M. Miller, Jr., of the North Carolina Cotton Manufacturers' Association, in a recent interview at Charlotte, N. C., sounded a strong note of warning relative to the fuel and energy supply of the future, in which he declares that the tendency of the many hundreds of manufacturing plants in the south generally is now to make use of power from many hydro-electric plants.

Mr. Miller bases this statement on the cost of coal, and says that unless the railroads shall make a material reduction on charges for hauling it, the manufacturers will turn to the electric current, now so widely distributed through the cotton-mill section of the south, for their power. Mr. Miller has pointed out that the issue is clearly drawn and that unless the railroads take unanimous steps toward reducing the cost of handling coal, they will have to face the consequences, in his opinion. Mr. Miller also points to the Southern Power Co., with its ultimate development of 200,000 horsepower, as a proof of what he contends concerning the fuel and power proposition.—*Electrical Review.*

A NEW DOUBLE CRANK PRESS.

The increasing variety of articles that are being manufactured in power presses has necessitated the designing and building of many special presses. In the accompanying illustration is shown a special double crank press recently designed and built by the E. W. Bliss Co., 8 Adams street, Brooklyn, N. Y. This machine is made with particularly heavy bed, slide and crown piece and with extra heavy parts throughout. The result attained by the liberal proportioning of the parts and by other structural features is the securing of the necessary strength and great rigidity for accurate cutting and punching operations extending over the entire breadth of wide sheets to be fed through the machine from front to back, or similar operations extending over the entire length of plates to be laid on the dies. The machine is so arranged that an automatic feed for feeding sheets from 6 feet to 10 feet wide and up to 40 inches long may be readily attached, the feed varying from 0 to 6 inches in length. It may also be fitted with the knockout for lifting work from the dies if required.



Bliss Special Double Crank Press.

The machine may be used for stamping, bending or channeling operations, also in the manufacture of metal furniture, moldings, etc. The safe working capacity of the machine as regards pressure that may be exerted is from 100 tons for operations requiring great rigidity, such as those first mentioned, up to 140 tons for some of the other kinds of work.

The slide moves in long guides gibbed in the most approved manner for the avoidance of looseness and for taking up wear. The slide is also counterbalanced by springs, this with the length and construction of the guides and rigidity of the machine throughout, making accurate work possible with a rapid succession of strokes, eliminating danger of shearing or otherwise endangering costly punches and dies once they are properly set.

The two connections are adjustable simultaneously by the rotation of a shaft connecting by gears to the adjusting screws of each. These screws are of liberal diameter and are made of high carbon crucible steel of great endurance. The crank shaft is of large diameter and made of 50 carbon open-hearth steel to resist bending and tortional stresses. An inside bearing is provided adjacent to each crank to receive up-thrust. The frame of the machine is sectional, the bed, crown and end columns being independent castings bolted together and so grooved as to relieve the bolts of all stress due to pressure transmitted. The main gear is fitted with a Bliss clutch and all the gearing has machine cut teeth.

The flywheel is 42 inches in diameter by 6-inch face, and weighs 900 pounds. The press is geared 36:1 and makes 18 strokes per minute.

TESTS OF STRESSES IN NEW BEAVER BRIDGE.

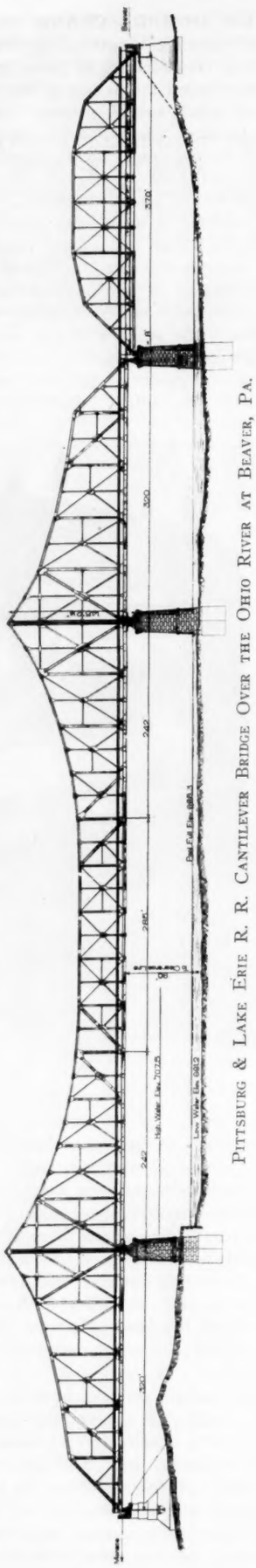
Important tests relative to the stresses upon steel bridge members which are being made in an exhaustive manner for the first time are now being continued under the auspices of United States government engineers upon the large new bridge undergoing construction across the Ohio river at Beaver, Pa., for the Pittsburg & Lake Erie railroad.

An effort is being made to conclusively determine the dead load stresses in the metal after erection. This is being done by establishing the distance between points fixed upon the steel before it has been placed in position in the structure and then by measuring the spread between the same points after erection. The differences in these distances will represent the elongation or shortening of the metal due to the stresses and by means of this data the stresses themselves will be determined. The distances will be measured to limits of error not exceeding 0.002 inch.

The tests have been under way for several months and about 500 points have already been placed upon the different members of the partially completed structure. The new bridge is not expected to be erected and in service before next spring and the result of the tests will then be announced.

A commission of prominent engineers is conducting the work. The United States government is represented by Lieut. Col. C. B. Wheeler, ordnance department of the Watertown arsenal, Watertown, N. Y., and J. E. Howard, engineer of tests of the Watertown arsenal. The other engineers engaged are Paul L. Wolfel, chief engineer of the McClintic-Marshall Construction Co. which is erecting the bridge; Albert Lucius, 607 Potter building, New York, the designer of the bridge; Prof. F. E. Turneaure, dean of the College of Engineering of the University of Wisconsin, Madison, Wis.; A. W. Carpenter, engineer of structures, electric zone, New York Central Lines, and A. R. Raymer, assistant chief engineer of the Pittsburg & Lake Erie railroad. The tests have been in charge of Mr. Raymer. Prof. Turneaure is the official representative of the commission of the American Railway Engineering and Maintenance of Way Association.

The new Beaver bridge is one of the largest now in course of construction in the country. It is of the cantilever type and the steel work is 1,779 feet in length. The McClintic-Marshall Construction Co., Pittsburg, are the contractors.



PITTSBURG & LAKE ERIE R. R. CANTILEVER BRIDGE OVER THE OHIO RIVER AT BEAVER, PA.

THE STORY OF THE DODGE MFG. CO.

There have been many interesting stories written and told of the Dodge Mfg. Co., Mishawaka, Ind., which is today well known in the engineering world, but the best story that has yet been given of the founding and development was that in a series of paintings arranged on floats and used in a recent industrial parade at Mishawaka.

There was a picture of the cradle of the company back in '78 when in a little frame shop woodenware was made and sold to dealers in that section. Then followed paintings showing the destruction of the factory in '79, and a demonstration of push in workmen busy on the foundation for a new and larger structure nearby while the embers were yet smoking and the birth of the "Independence" wood split pulley; the Dodge American system of rope transmission introduced in 1883, following the granting of letters patent for the wood split pulley; the addition of iron goods in 1890 when the Dodge idea—standardization and interchangeability—was applied to iron split pulleys, hangers, friction clutches, etc., and finally the plant today, a mammoth institution covering almost 85 acres of ground and manufacturing everything for the mechanical transmission of power, elevating and conveying machinery, and the Eureka water softener and purifier.

Wallace H. Dodge, founder of the Dodge Co., died in 1894 after his dream of pulleys with standard bores and interchangeable bushings to fit all sizes of shafting and with stocks carried in all the manufacturing centers of the world and a factory employing hundreds of men, had been realized, but with the country in the midst of a panic. Black clouds hung over thousands of concerns, and it was in this trying period that Melville W. Mix was made president and general manager of the Dodge Corporation. He had been the Chicago manager and later the sales manager and was only 28 years old when he assumed his new responsibility. The company came through that trying period with flying colors and its capitalization was later increased from $250,000 to $1,000,000, and is reported to have a large available surplus.

PROGRESS IN ELECTRIC CURRENT DEVELOPMENT IN THE ARTIFICIAL LIGHTING FIELD*

By Albert F. Ganz, M. E.[1]

One hundred years ago Sir Humphry Davy exhibited the first voltaic arc before the Royal Institution of London, and this may be said to mark the birth of the electric light. This Davy arc was produced between wood-charcoal electrodes, by means of a powerful voltaic battery of copper-zinc cells, and was at best a brilliant lecture-room experiment. Subsequently he enclosed the electrodes in a glass vessel, from which the air was exhausted to prevent combustion of the charcoal points. No attempt to use the electric arc as a source of light was made, however, until about 1844, when a French physicist, by name of Foucault, produced an arc between electrodes made of gas retort carbons by means of a large Bunsen battery. Foucault produced a remarkably steady and continuous arc light, which he exhibited publicly in Paris, and, indeed, used this arc light for lighting the stage of the Paris Opera House during a performance of the opera, and for lighting a number of public squares in Paris. This is the first time that the possibility of using electric light for lighting houses and streets began to be considered. The expense and trouble involved with the use of batteries, as well as the necessity of controlling the lamps by hand, soon discouraged any attempt to use the Foucault arc lamp for commercial lighting. In 1847 Thomas Wright, of London, produced the first arc lamp in which the carbons were automatically regulated, the carbons being in the form of disks, which were slowly rotated by clock-work. This was followed by the development of various types of regulating mechanisms, by many investigators in Europe and in America, who used various devices for striking the arc and feeding the carbons as they were consumed.

Faraday's Discovery.

In 1831 Michael Faraday discovered the principle of electro-magnetic induction, and this discovery was followed by the invention of early forms of magneto-electric machines. These machines made it possible to obtain powerful currents in a simpler and cheaper manner than was previously possible with batteries, and a number of attempts were made to employ such machines for arc lighting. One of the first important applications was made in 1858 by the lighthouse department of England. This department, under the direction of Faraday, successfully introduced the electric light in its important lighthouse at South Foreland, employing the Alliance dynamo, devised by Nollet and Van Malderen, of Belgium. It is an interesting historical fact that the Alliance dynamo thus employed for supplying current to an electric arc light was built originally for the purpose of decomposing water, in order to employ the resulting gases to produce a powerful lime light.

The Electric Candle.

In 1876 Jablochkoff brought out his celebrated electric candle, and obtained patents for this all over the world. The Jablochkoff candle was marked by the absence of any regulating mechanism. It consisted, broadly, of two vertical sticks of carbon separated slightly by an insulating material, such as kaolin, which was consumed at the same time as the carbons. These lamps were found to burn best with alternating current, which insured an even consumption of the carbons. They were soon to be seen burning on the streets of European cities, and found popularity in the United States as well, one of the first places in this country in which they were employed being the store of John Wanamaker, in Philadelphia. While a number of these Jablochkoff candle installations were made they were actually used for a comparatively short time only.

The introduction of the Gramme dynamo-machine in 1871, marked a new era in electric lighting on both sides of the Atlantic, and inventors began to develop direct-current dynamo machines and arc lamps operated by these machines. Prominent among the early American inventors in this field may be mentioned Weston, Brush, Thomson, Houston, Wallace, Farmer, Wood, Hochhausen and others. During the following ten years a number of direct-current dynamo machines were developed for supplying current to arc lamps. These machines were designed to supply at first a single lamp, while later machines were made to supply as many as 50 lamps in series. Lamps employing two pairs of carbons were also introduced, so that when one pair became consumed the other would be automatically cut in, thus continuing the lamp in operation until both sets of carbons were consumed and so reducing the labor of trimming.

It is interesting to note that, in 1876, at the Philadelphia Centennial Exposition, a portion of the Exposition buildings and grounds was illuminated by a few electric arc lamps supplied from a Wallace-Farmer dynamo-electric machine.

One of the earliest attempts to utilize a wire heated to incandescence by an electric current as a source of light was made by Grove, the inventor of the battery which bears his name, and is described in the "Philosophical Magazine" for 1840. Grove's lamp was, of course, of very crude form, consisting of a spiral of platinum wire attached to two copper supports and enclosed in a cylindrical glass jar inverted in a shallow dish of water. Grove states in his paper that he succeeded in reading for many hours by the aid of this lamp. In 1841 De Moleyns, of England, patented an incandescent lamp which consisted of a platinum wire enclosed in an exhausted bulb and rendered incandescent by an electric current. A few years later, Starr, of Cincinnati, devised a lamp in which a thin strip of graphite, connected to two conducting wires of platinum, was suspended in an exhausted glass globe and rendered incandescent by an electric current. This lamp involved in fact the essential elements of the carbon filament lamp of today. No practical lamp resulted, however, from these early experiments.

About 1875 a number of investigators set their energies to the development of a commercial incandescent lamp, and produced some practical lamps, but these lamps were not introduced in actual practice until about 1880. Prominent among the workers in this field at this time were Weston, Sawyer, Man, Edison, Maxim and others.

First Electrical Exposition.

By the year 1880 a number of direct-current dynamos had also been developed for supplying incandescent lamps in multiple at constant voltage. The great interest which had developed by this time in the electrical industries gave rise to the first International Electrical Exposition, which was held

*Written for Fiftieth Anniversary Issue of American Gas Light Journal, July, 1909.

[1]Professor of Electrical Engineering, Stevens Institute of Technology.

in Paris in 1881. At this exposition most of the prominent inventors and manufacturers in the electrical fields of the world exhibited their inventions and products. A good description of this exposition is found in a government report, made by Major David Porter Heap, of the corps of engineers, United States army, and published by the engineer department, United States army, in 1884. A very complete history of electric illumination from the earliest beginnings to the year 1881 is also found in a large work by James Dredge, entitled "Electric Illumination" and published in 1882 by John Wiley & Sons, of London and New York.

From this time to the present the development in the electric lighting field has been enormous. This progress has been well recorded by T. Commerford Martin, in the Annual Reports of the Committee on Progress of the National Electric Light Association. The development, up to 1902, is also well set forth in the Special United States Census Report, on Central Electric Light and Power. Stations, issued in 1905 by the department of commerce and labor. Some of the data contained in the following has been obtained from the above reports. Electric lamps have been developed along three distinct lines, namely, arc lamps, incandescent lamps and vapor lamps. The progress since 1880 is conveniently considered under the separate headings of "Development of Arc Lamps," "Development of Incandescent Lamps," "Development of Vapor Lamps," and "Development of Machinery and of Systems of Distribution."

Development of Arc Lamps.

The series direct-current open arc lamp was the most generally used arc light for street illumination up to the late nineties, and quite a number of these are, in fact, still in use. These open arc lamps operate generally with a short arc taking from 40 to 50 volts. The upper carbon is made the positive electrode, and practically all of the light comes from the incandescent crater of this positive carbon, the arc itself being non-luminous; the greatest intensity of light is projected at an angle of about 45 degrees downward. These open arc lamps were developed in two sizes, the larger size taking 9.6 amperes, or about 450 watts, and formerly known as the normal 2,000 candle power lamp or "full-arc," and the smaller size taking 6.6 amperes, or about 325 watts, and formerly known as the normal 1,200 candle power lamp or "half-arc." This does not mean, however, that these lamps actually give a light of 2,000 and 1,200 candles respectively, but these ratings have become trade names. Dr. Bell states that the 9.6-ampere lamp gives about 1,200 candles in the direction of maximum intensity, and a mean lower hemispherical candle power of about 600; and that the 6.6-ampere lamp gives about 700 candles in the direction of maximum intensity and a mean lower hemispherical candle power of about 350.

For a time the size of an electric arc lamp was expressed in terms of watts consumed in the arc, and specifications for street lighting were frequently drawn up on this basis. With the introduction of enclosed and flaming types of arc lamps this method was necessarily abandoned. The present practice is to express the light intensity in mean spherical candle power and the specific power consumption in watts per mean spherical candle. This specific power consumption is frequently called the efficiency of a lamp, but it is actually the reciprocal of efficiency. Special integrating photometers have, in fact, been devised whereby mean spherical candle power can be quickly determined from a single photometer setting. In some cases mean lower hemispherical candle power is measured and the specific consumption is expressed in terms of watts per mean lower hemispherical candle. This is frequently done in the case of lamps which are so designed as to project all of the light into the lower hemisphere.

Series arc lamps operating on constant-alternating current circuits have also been introduced, especially since the constant-current transformer was developed in 1902. In the alternating current arc each carbon becomes alternately positive and negative, and the reversals of current must be sufficiently rapid so that the arc is not extinguished between reversals and that there are no disagreeable fluctuations. This condition necessitates a frequency of at least 40 cycles per second, and in practice a frequency of 60 cycles or 120 alternations per second is most frequently employed. Owing to the fact that the light is emitted from the incandescent tips of both carbons the light is distributed equally in the upper as well as in the lower hemisphere. An alternating current arc lamp also gives very much less total light than a direct-current arc lamp consuming the same number of watts.

The Enclosed Arc Lamp.

In 1893 Louis B. Marks described the enclosed type of arc lamp, in a paper presented at the International Electrical Congress, held in Chicago in that year. The enclosed arc lamp quickly met with favor in America and soon began to supersede the open arc lamp. In the enclosed type of arc lamp the arc is surrounded by a small globe of refractory glass, in the bottom of which is fastened the lower carbon and through the top of which the upper carbon moves freely in a stuffing-box arrangement. By this means access of air to the arc is restricted and the enclosure quickly fills with heated gases with the result that the arc takes from 70 to 80 volts with a reduced current and the carbons burn away much more slowly than with the open arc. The gases enclosed in the inner globe are heated to incandescence in the vicinity of the arc, so that the entire interior of the globe appears to be incandescent, thus giving a very much better distribution of light than with the open arc. The total quantity of light emitted from an enclosed arc lamp is very much less, however, than that emitted from an open arc lamp taking the same number of watts; but, owing to the more uniform distribution of the light, a better general illumination is produced and the color of the light is also more nearly white. A pair of carbons will last about 100 hours in an enclosed arc lamp, but only from 5 to 10 hours in an open arc lamp; there is, therefore, a great saving in carbons and in labor of trimming, with the enclosed arc lamp over the open arc lamp. This is the principal reason why the enclosed arc has almost entirely superseded the open arc in America. In Europe, where carbons and labor are cheaper, the enclosed arc has not met with favor, because of its much lower light efficiency. Enclosed arc lamps ars used both for street lighting and for interior lighting of shops and stores, for which latter class of lighting the whiteness and uniform distribution of the light makes them preferable to open arc lamps.

(To be continued.)

ADVANCE IN PRICES OF CRUDE RUBBER.

The consumption of rubber is now so intimately associated with the machinery trades, that the following from Consul George H. Pickerell, of Para, Brazil, will be of interest. He states that in the month of May the export of crude rubber from that port aggregated 2,704,479 kilos (1 kilo = 2.2 pounds), of which 1,168,503 kilos were shipped to the United States. The consul further reports that the prices of crude rubber have increased at a very lively rate. These increased prices are causing each producer to forward to the market every pound of crude he can, and it is believed the effect will be felt upon the coming crop.

STANDARDIZATION OF THE NOMENCLATURE OF ELECTRIC MOTORS.

The use of electric motors has become so common in iron and steel working industries that the following from the *Electric Journal* will doubtless be found of service in many plants where the electric equipment, and the handling and correspondence and other matters connected therewith, are not in the hands of an expert electrician.

The growth in the number and character of electric motor applications has led to the grouping of various motors of similar characteristics into classes. It has been found most convenient to designate these classes according to the speed characteristics of the motors. While practically all of the motor manufacturers have adopted a uniform classification and nomenclature, the motor users and general public have not had the same clearly outlined to them. The principal error arising in the nomenclature of motors is in the use of the terms "adjustable," "variable," and "varying" speed. It is only within the past few years that confusion has arisen in the use of these terms as applied to motors. When the value of motor applications first began to be generally appreciated and the use of motors increased, the distingushing names for the various types of motor found to be desirable for the various classes of service were based upon the windings of the motor, such as shunt, series and compound-wound for direct-current motors.

Later, as the shunt and compound-wound motors took different forms, such as adjustable speed for machine tool work where a number of different speeds can be secured and at any of these speeds the motor has practically the same characteristics as at any of the other speeds, it was found necessary to use a new descriptive term. The expression "variable speed" came into very general use, the ordinary specification for a direct-current machine tool motor being "shunt-wound, variable speed." The term variable speed in this connection is manifestly a misnomer. The true variable speed or, more properly, varying speed motor, is one in which the speed variation is inherent, i. e., occurs without any external manipulation. Such a motor is the series-wound motor, whose speed varies with changes in the load. The term "adjustable speed" as applied to the ordinary machine tool motor with field control accurately describes the motor. Under full field conditions, these motors have certain speed characteristics with varying load. By means of a rheostat the field current can be adjusted so that a number of higher speeds can be secured and at each of these speeds the motor will have practically the same speed characteristic under varying loads as at the lower speed.

Constant speed.	Continuous duty.	Load Constant.	Fan.
		Load Varying.	Line Shaft.
	Intermittent duty.	Load Constant.	Vacuum Pump.
		Load Varying.	Paper Cutter.
Adjustable speed.	Continuous duty.	Load Constant.	Paper Calender.
		Load Varying.	Printing Press
	Intermittent duty.	Load Constant.	Vacuum Pump.
		Load Varying.	Lathe.
Varying speed.	Continuous duty.	Load Constant.	Small Fan.
		Load Varying.	Bending Press.
	Intermittent duty.	Load Constant.	House Pump.
		Load Varying.	Crane.
Multi-speed.	Continuous duty.	Load Constant.	Ventilating Fan.
		Load Varying.	*
	Intermittent duty.	Load Constant.	Fire Pump.
		Load Varying.	*

*Multi-speed motors are at present almost exclusively alternating-current motors. The classes of service in which these motors are used are limited, but a considerable field may develop later.

The speeds of alternating-current motors cannot be adjusted as easily as can those of direct-current motors and the same confusion in the application of terms has not arisen. However, alternating-current motors and direct-current motors can easily be classified under the same speed headings and this has been done, the idea being that a uniform classification and nomenclature will be of great advantage, both to motor users and to the manufacturers.

The American Institute of Electrical Engineers has adopted a classification drawn up along these lines and the American Association of Electric Motor Manufacturers has adopted the same classification, the wording in the latter case being slightly modified for the sake of more definite interpretation as applied to existing commercial and engineering conditions. The wording of this classification as adopted by the motor manufacturers is as follows:

A.—Constant Speed Motors—in which the speed is either constant or does not vary materially, such as synchronous motors, inductions motors with small slip, ordinary direct-current shunt motors, and and direct-current compound-wound motors, the no-load speed of which is not more than 20 per cent higher than the full-load speed.

B.—Multi-Speed Motors—(two-speed, three-speed, etc.)—which can be operated at any one of several distinct speeds, these speeds being practically independent of the load, such as direct-current motors with two armature windings and induction motors with primary windings capable of being grouped so as to form different numbers of poles.

C.—Adjustable Speed Motors—1—Shunt-wound motors in which the speed can be varied gradually over a considerable range, but when once adjusted remains practically unaffected by the load, such as motors designed for a considerable range of speed by field variation.

2—Compound-wound motors in which the speed can be varied gradually over a considerable range, as in 1, and, when once adjusted, varies with the load, similar to compound-wound constant-speed motors or varying-speed motors, depending upon the percentage of compounding.

D.—Varying Speed Motors—or motors in which the speed varies with the load, decreasing when the load

increases, such as series motors and heavily compounded motors. Examples of heavily compounded motors are those designed for bending roll service and mill service, in which shunt winding is provided only to limit the light load operating speed.

The above classification and nomenclature should be thoroughly understood and adopted by every one having to do with motor applications, and in discussions on the subject, in connection with trade papers and in correspondence. In order that the classification may be thoroughly understood attention is called to one or two points that may not be entirely clear. Under paragraph A, it will be noted that "direct-current compound-wound motors, the no-load speed of which is not more than 20 per cent higher than the full-load speed," are listed as constant speed motors. Within their limit such motors are true varying speed motors. It is, however, commercially desirable to designate these motors as constant-speed motors and to establish a dividing line between constant and varying speed motors, based on the percentage change in speed from no load to full load. This is for convenience in designating motors and for the purpose of calling direct attention to the dividing line between what is commonly known as standard compounded and heavily compounded motors.

Under paragraph C it will be noted that shunt and compound-wound motors are both placed in the adjustable speed class. In the case of the compound-wound adjustable speed motor when operating at the higher speeds, the speed characteristic is practically that of a varying speed motor. This varying speed characteristic may lead to some confusion with this particular motor, and it is, therefore, necessary to note carefully the wording of this paragraph. This type of motor is classified as adjustible speed rather than varying speed because in the majority of instances it is the adjustable speed characteristic which is particularly desired in making the application of the motor to its work rather than the increased compounding effect that occurs when operating at the higher speeds. This increased compounding effect is due to the lower saturation in the motor and the increased proportion of series field to total field, and is in an incidental characteristic rather than the one for which the motor is designed.

Many motor applications can be made more intelligently if, in addition to using the classification given above, the service is described in terms of continuous or intermittent duty, and load constant or varying. In order to make this point clear, the table has been prepared, giving one example of each of the different classes of service. Practically every motor application can be listed under one or the other of these headings.

BOOK REVIEWS.

Tables of the Properties of Steam and Other Vapors. By Cecil H. Peabody. 8 vo., 133 pages. New York: John Wiley & Sons, $1 net.

This work is the eighth edition of the original Peabody's tables, published in 1888, and revised to take advantage of the important researches of recent years. To this end, the tables have been entirely recomputed in the light of this later information. Recent advances in turbine construction have greatly enlarged the use of adiabatic computations and has made felt the want of quicker and more reliable methods. The temperature-entropy table has been added for superheated steam. In addition to the tables of properties of water vapor, there are included vapors of ether, alcohol, chloroform, ammonia and others, besides a metric conversion table and tables of logarithms. The book will doubtless find place among those the designing engineer keeps nearest his hand.

Steam Power Plant Piping Systems: Their Design, Installation and Maintenance. By W. L. Morris. M. E. 509 6 x 9 pages. New York: McGraw-Hill Book Co. $5 net.

In their introductory notice the publishers say: "William L. Morris wrote this book. There is no man in the country better equipped to write a complete treatise on all phases of piping, and there has been no book on the subject that fulfilled every requirement." We agree with them, that this book does as nearly as any book ever can. The writer has known William L. Morris many years and knows that he has the experience upon which to draw in making a satisfactory work. The book is profusely illustrated with diagrams and sketches made in a simple, lucid style, which will convey the desired information to the dullest and least informed mind. In this respect it is a model. The working steam fitter, as well as the engineer, will find suggestions on almost every page and nothing for which he will need the use of mathematics. Extended perusal merely makes it more difficult to express proper appreciation without risking the charge of saying too much.

Engine Lathe Work. By Fred H. Colvin. 180 4½ x 7 inch pages. New York: Hill Publishing Co., 505 Pearl street. $1 net.

That there is room for a work devoted to lathe work alone is not to be denied. General machine shop work with its wide range of operations is of far too varied character to be thoroughly covered in one volume. There is all the greater reason then, why, in a work devoted to a special line, the information should be strictly up to date and accurate, and while commending the general scheme of the book and the selection and arrangement of its contents, we cannot admit that in all respects it comes up to the desired standard. Not that the defects noted are vital, but that they are apt to produce erroneous impressions. Thus, for instance, on page 21 in discussing the centers of the lathe, the author says that the effect of a live center running out of truth is to make it impossible to produce round work, which, of course, is not at all what he probably meant to say, as the eccentricity of the live center has nothing at all to do with the work being round. As an extreme example, we may take an off-set center for turning crank shafts.

We question very much whether the author will find many modern or progressive shops in which the tool shapes which he reproduces on page 37 will be accepted as standard, and the reader has only to turn to the next page and compare them with the shapes of the Sellers chart. Many of the author's suggestions as to setting and shape of tools the mechanic will soon learn to pass upon for himself and, after all, there are nearly as many opinions on the subject of boring tools, for instance, as there are men using them. On the whole, however, the book is a good one and well worth to any mechanic, even though he may be an old hand, the dollar that it costs.

TRADE PUBLICATIONS.

WATER SOFTENING AND PURIFYING APPARATUS.—The Wm. B. Scaife & Sons Co., Pittsburg, Pa., is sending out a pamphlet entitled "Feed Water Heaters as Purifiers," and reprint of a paper presented by Mr. J. C. W. Greth, in which the use of the feed water heater as a water purifier is treated.

LOCOMOTIVES.—The American Locomotive Co., 30 Church street, New York City, in its pamphlet No. 10034 is circulating a paper on "Articulated Compound Locomotives," a paper read before the American Society of Mechanical Engineers at the December meeting, by C. J. Mellin, a member of the society and consulting engineer of the American Locomotive Co.

The Herman Pneumatic Machine Co., Zelienople, Pa., has issued a new 31-page illustrated catalog describing its pneumatic jarring molding machine and other foundry appliances. The jarring method of machine molding is discussed. A list of some of the installations of the Herman machine is given.

NEWS FROM MANY INDUSTRIES

(In order to assist the post offices in delivering letters to new concerns, it is suggested that the names of incorporators be written in the lower left hand part of every envelope addressed to such new companies.)

New Buyers:—

The Cayuna Range Iron & Land Co., Duluth, $50,000 capital, has been incorporated by S. T. Harrison, L. C. Morey and E. H. Mather, Duluth.

The B. & M. Machine Co., Akron, O., has been incorporated, capital $10,000, to manufacture machinery. Incorporators: S. H. Boyd, K. L. Meredith, O. T. Lane, Allen E. Kile and A. T. Meredith.

The Turbo Engineering Co., Chicago, general engineering and contracting, has been incorporated with $25,000 capital, by C. A. S. Howlett, W. L. Stockton and H. Hertz.

The A. C. Torbert Co., Hammond, Ind., machine and implement manufacturer, has been chartered with a capitalization of $200,000. A. A. Basse, L. E. Otte and N. S. Smyser are the directors.

The Wright Wrench Mfg. Co., Canton, to manufacture tools, implements, wrenches, etc., with $150,000 capital stock, has been incorporated by James D. Wright, Harry C. Haight, Henry C. Milligan, Thomas F. Turner and M. C. Barbery.

The Batavia Foundry Co., Batavia, O., to manufacture heavy castings, has been incorporated with $5,000 capital stock. Those interested are Gustave Wilke, Dorothy Wilke, John S. Davis, Elizabeth W. Davis, Frank C. Marters and Katherine F. Marters.

The Stevens-Sowers Motor Car Co., Boston, has been chartered with $12,000 capital stock, to manufacture and sell motors of all kinds. The directors are James W. Stevens, president and treasurer; Wheaton Kittredge, clerk, both of 18 Tremont street, Boston.

The International Burner Co., Brooklyn, to manufacture machinery, tools and supplies, relating to gas, electricity or steam, has been incorporated with $50,000 capital stock. The incorporators are Henry Nieman, 163 Ralph street; Anthony J. Ibert, 405 Evergreen avenue, all of Brooklyn.

The MacCracken-Hauer-Terry Co., New York City, to manufacture power and excavating machinery, etc., has been charatered with $15,000 capital stock, by George C. MacCracken, 50 Church street; Daniel J. Hauer, and C. Raymond Eaver, both of 21 Park Row; O. F. Terry, 50 Church street, all of New York City.

The Collister-Wellman Co., Cleveland, has been incorporated with $10,000 capital stock, to manufacture tools, etc. W. K. Wellman, W. C. Collister, F. R. Marvin, R. S. Kennedy and John S. Smart are the incorporators.

The Henderson Engineering & Sales Co., New York City, has been chartered with $100,000 capital stock to manufacture foundry machinery. Those interested are Henry Henderson, 12 Lexington avenue; Burt D. Powleson, 620 West 116th street; Chandler A. Oakes, 50 Pine street, all of New York City.

C. F. Splitdorf, New York City, to manufacture electrical machinery, ignition apparatus, automobile parts and sundries, has been granted a charter with $500,000. Those interested are Charles F. Splitdorf, 433 East 87th street; John Splitdorf, 1428 Davis street, both of New York, and Peter J. W. Kelley, 312 Fairmont avenue, Jersey City, N. J.

The Traction Materials Co., New York City, has been incorporated to manufacture electrical and mechanical apparatus, appliances, etc., material and supplies, with $5,000 capital stock. The incorporators are Adolph Schneider, 1834 Catin avenue, Brooklyn; George W. Meacham, 126 Riverside Drive, and John G. Bishop, 87 Madison avenue, both of New York City.

The Star Vending Machine Co., South Bend, Ind., manufacturing, has been granted a charter, with $151,000 capital stock. The incorporators are S. B. Robinson, F. E. Whitehall, G. A. Robinson, G. A. Werwinski, R. E. Klysz and I. S. Werwinski.

New Construction:—

The Greensburg Foundry & Machine Co., Greensburg, Pa., has let a contract for the construction of its new works.

The Jackson & Sharp plant of the American Car & Foundry Co., Wilmington, Del., is to build a car erecting shop, 160 x 150 feet.

The Bonner Wrench Co., Chrisman, Ill., plans the erection of a new building to be used as an addition to its present plant.

The Kansas City Southern Railway Co. will spend about $1,000,000 in rebuilding its shops and trackage facilities in Shreveport, La.

D. M. Parry, formerly president of the National Manufacturers' Association, will build an automobile factory in Indianapolis.

A permit has been issued to the Pullman Co. for the erection of a foundry and machine shop at Chicago. The building is to be three stories and to cost $100,000.

The Pacific Iron Works, Bridgeport, Conn., has awarded a contract for the proposed additions and changes in its plant. The new building is to be 100 x 108 feet.

The Pioneer Iron Works, Olympia, Wash., which recently lost its pattern shop and patterns and part of its machinery by fire, announces that it will rebuild as soon as the insurance is adjusted.

The E. E. Gage Mfg. Co., Gardner, Mass., manufacturer of machine knives and special parts of machinery, has plans prepared for an addition to its plant consisting of a two-story building, 80 x 40 feet.

The Niles & Scott Co., LaPort, Ind., has received plans from an architect for an addition to its foundry, 60 x 75 feet. The boiler room will also be rebuilt and two new boilers and other equipment added.

A. Weiskittle & Son, stove manufacturers, are preparing to add two buildings to their plant in Baltimore, Md. One is to be 75 x 100 feet and the other 100 x 150 feet. They are to be equipped with machinery and the factory force will be increased.

The Mt. Vernon Car Mfg. Co., through W. C. Arthurs, president, has announced its intention to add a steel car department to its works, which has heretofore built wooden cars. The plant after the addition is made will have a capacity of 50 cars a day and the working force will be increased from 1,500 to 2,000.

Vice president and general manager C. R. Schmidt of the Central Foundry Co. announces that the Anniston, Ala., plant of his concern is to be enlarged. This property of the Central Foundry Co. is singularly unfortunate, having been damaged by floods about three years ago, burned last spring and, subsequent to that time, wrecked by a cyclone.

The Domestic Engine & Pump Works, Shippensburg, Pa., which sustained a considerable loss by fire recently started immediately after the fire to repair the damage to the foundry so as to use that building, and

will erect two new buildings to take the place of the damaged structure. The new foundry will be 100 x 75 feet and the second new building, 60 feet in length, will be used to test the product of the works.

Ground is being broken for an addition to the Adrian Steel Casting Co., Adrian, Mich. The foundry is to be 100 x 50 feet with a shed attached to accommodate a core room, cupola, blower, rattler and other equipment. At present the company is operating a foundry in quarters separate from the steel castings department and the new building is designed to enlarge the facilities of the company and bring the two plants together. The work is expected to be complete before Oct. 1.

General Industrial Notes: —

The Portsmouth Steel Co., Portsmouth, O., has begun work on the installation of a new blooming mill.

A plant for the recovery of iron sulphate is to be added to the plant of the National Tube Co., at Lorain, O.

The furnace of the Lake Superior Iron & Chemical Co., at Elk Rapids, Mich., will go into blast Aug. 15.

After being shut down for two years all the departments of Moorehead Bros. & Co.'s steel mills, Sharpsburg, Pa., have resumed operation.

The Seneca Falls Engine & Supply Co., Seneca Falls, N. Y., is engaged in installing its machinery and expects to be in operation within a few weeks.

Hartman, Hay & Reis, Belleville, Ill., will reopen their nail mills Aug. 16, following a shut-down of several months. The mills will give employment to 180 men.

The Columbia Wire & Iron Works Co., Portland, Ore., advises that the new building which it will erect will be 100 x 100 feet, and will be equipped with the latest machinery.

A new cupola for the foundry of the Lake Shore railroad, in Elkhart, Ind., has been completed. The road proposes to use the cupola in part for experimental work with vanadium steel.

It is announced that work is to begin soon on the plant of the Keystone Engine Mfg. Co., Dallastown, Pa. Land for the site has been purchased and the company expects to employ at least 150 men.

The Ideal Carriage Washer & Automatic Water Saver Co., Rochester, N. Y., recently incorporated, has taken over the business of the Ideal Carriage Washer Co., and will manufacture carriage washers and automatic water savers.

The Russellville Iron Ore & Metal Co., Russellville, Ala., has acquired the fee of 670 acres of iron land and the mineral rights on 90 acres in the vicinity of Russellville and intends to develop the land and build a furnace.

The Peacock Iron Works, Selma, Ala., has been sold under a decree to satisfy creditors and subject to a mortgage of $10,000. Negotiations are pending with a view to resuming operations at the plant.

The Kinnel Edge Tool Co., Columbus, O., has taken over the business of Kinnel Bros., which had been conducted under that name for 60 years. C. C. Green, former treasurer of the state of Ohio, is general manager of the new company.

The machine shop of the Keystone works of the International Harvester Co., Sterling, Ill., is to be supplied with an equipment of electric motors to run the various machines in the shop. Turbine engines are now being installed to supply the power.

W. F. Norman Sheet Metal Mfg. Co., Nevada, Mo., manufacturer of structural sheet iron, advises that it is enlarging its plant by adding new machinery and duplicating machinery now operated. Most of the equipment has been ordered.

The fire at the plant of the Port Huron Engine & Thresher Co., Port Huron, Mich., destroyed the cupola room and machinery in it. The cupola itself was not damaged. The company made temporary repairs, and was running within two days after the fire.

The Warner Fence Co., Ottawa, Kans., advises that it is building a new plant at Pueblo, Colo., to supply its Rocky Mountain and Pacific coast trade. Equipment orders are in, and the plant is expected to be running by Oct. 1.

The T. L. Smith Co., Chicago, has been awarded a contract to build six stone crushers for the British government to be used in the construction of a pier and basin for the accommodation of ships of the british navy at Rosyth.

The plant of the Western Malleable Steel & Forge Co., Detroit, Mich., has been purchased by the E-M-F Co., and will be used in connection with its automobile business. The Buhl Malleable Co., as already announced, has taken over the business of the Western company.

The Star Foundry Co., recently incorporated, and formerly located at Riverside, near Seattle, has leased the property formerly occupied by the Phoenix Artistic Bronze & Iron Foundry, Youngstown, near Seattle. The new location gives the Star Foundry Co. much larger quarters. The company is making a specialty of brass and bronze castings.

Thomas M. Brennan, Chester, Pa., formerly superintendent of the Keystone Steel Casting Co., of that city, has opened a crucible steel foundry there. The furnace used is of a type invented by Mr. Brennan. It is intended to build a new and larger plant than the present one in the near future.

The Sheldon Axle Co., Wilkesbarre, Pa., advises that it is building a plant 467 x 60 feet, to be used exclusively in the manufacture of automobile springs, as the company has been engaged in that line for some time, and finds that its capacity is being exceeded. The new plant will be in operation in October.

The readjustment committee having in charge the future of Milliken Bros., Inc., structural iron and steel, New York, have secured the consent of 80 per cent of the creditors to a plan for reorganization. The receivers have been authorized to pay the semi-annual interest amounting to $90,000 on the $3,000,000 first mortgage bonds.

The United Coke & Gas Co. has closed a contract for the erection of 120 modern by-product coke ovens of the United-Otto system for the Dominion Iron & Steel Co., Ltd., Sydney, Cape Breton, Canada.

The increase of capital stock of the Portland Foundry & Machine Co., Portland, Ind., which was recently announced, was preparatory to building a drop forging plant, 42 x 100 feet, with machine shop 42 x 80 feet, and a foundry, 85 x 80 feet, of brick and steel construction. The company will continue to use its present boiler and machine shop and supply store, and will manufacture automobile forgings and parts and hardware specialties. Part of the machinery equipment has already been ordered but a number of machines will be needed within the next sixty or ninety days. The company will begin filling orders about Jan. 1.

Fires:—

Fire in the plant of the Central Foundry Co., Muskegon, Mich., did considerable damage on the morning of July 26.

The blacksmith shop of the Chattanooga Wire & Iron Works, Chattanooga, Tenn., was damaged by fire July 24. The damage was not extensive.

The foundry of the Wichita Mfg. Co., Wichita, Kas., was damaged to the extent of $1,500 July 24. A part of the building and some flasks and patterns were destroyed.